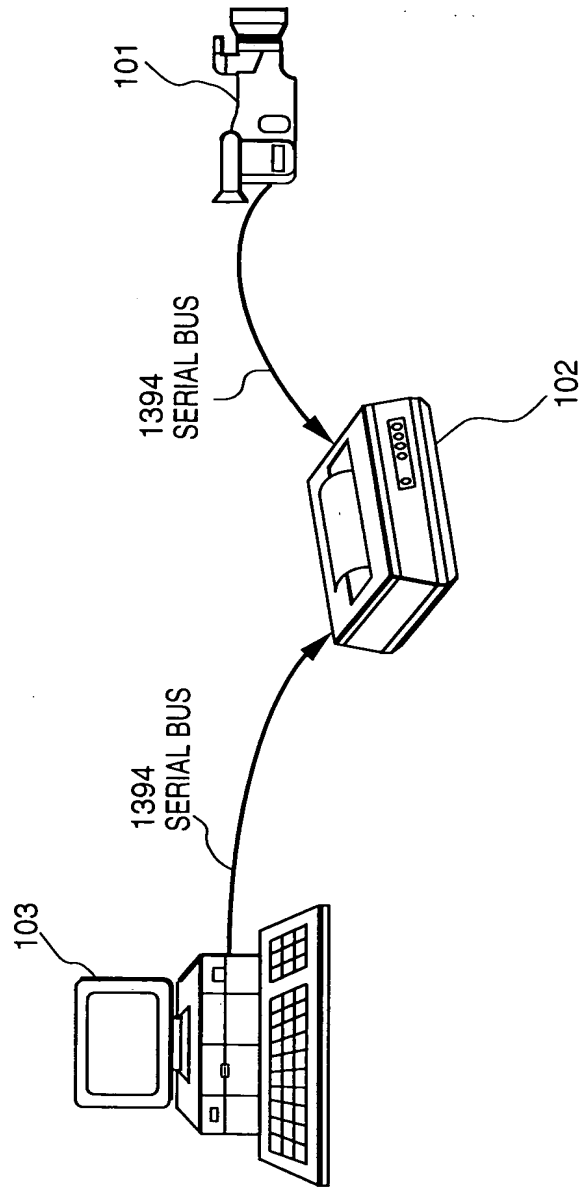
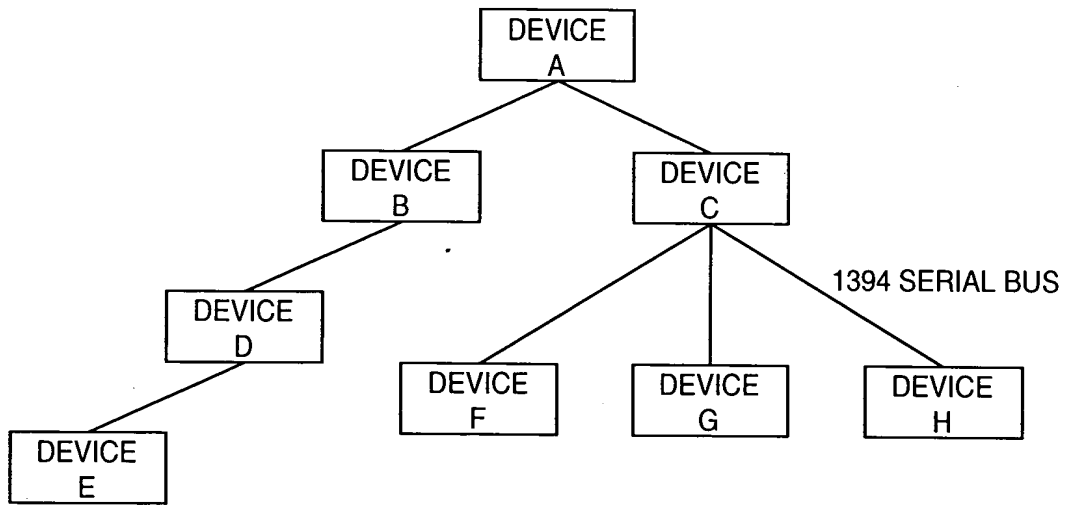
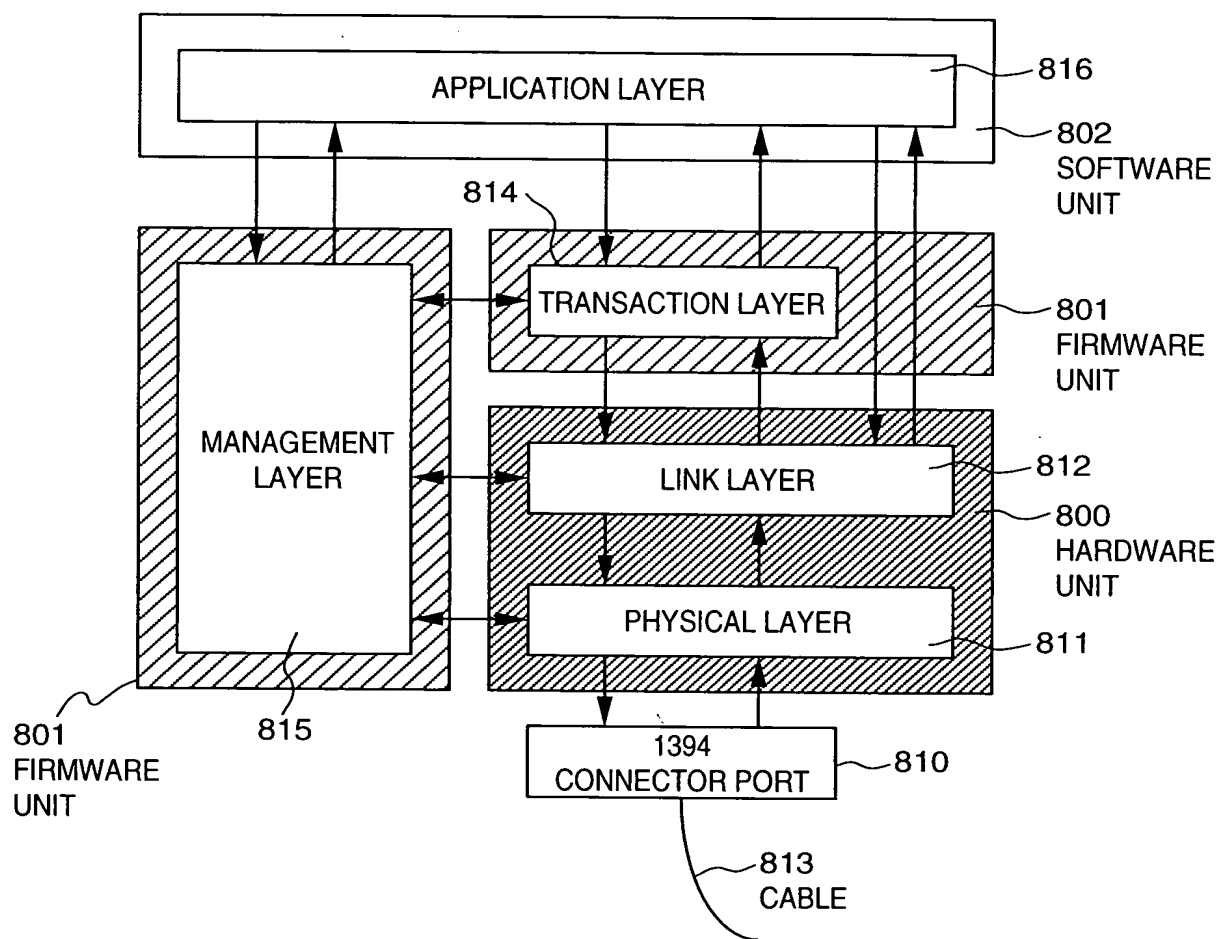
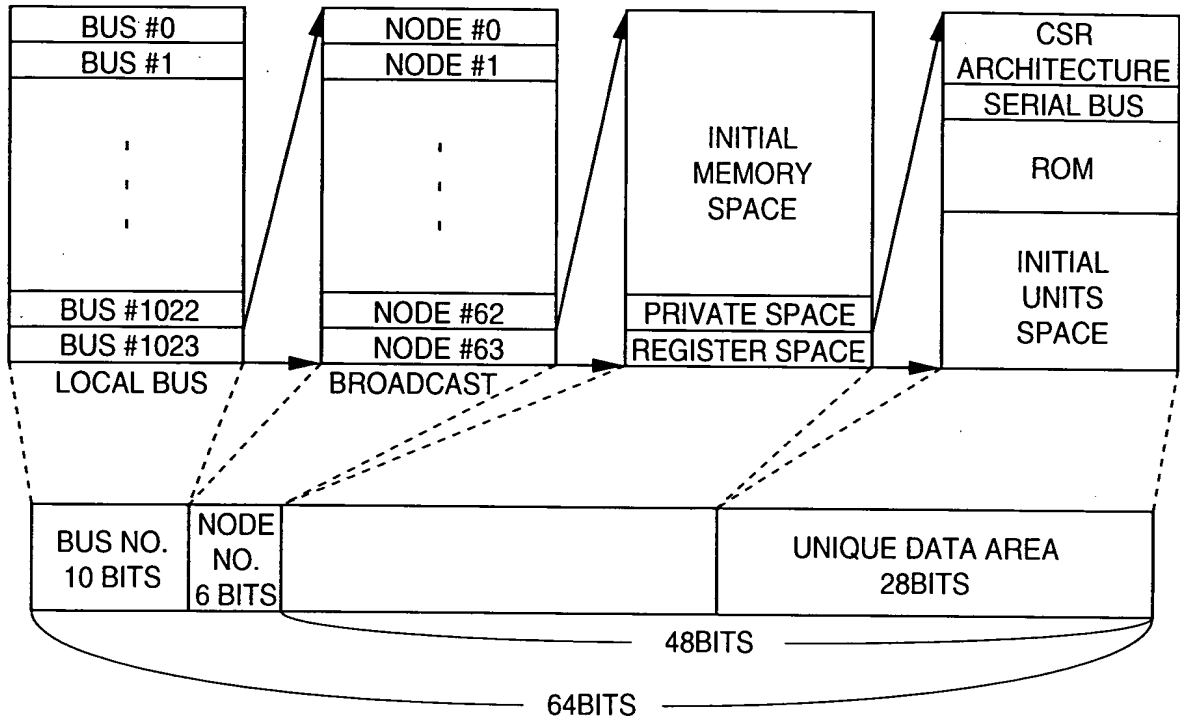
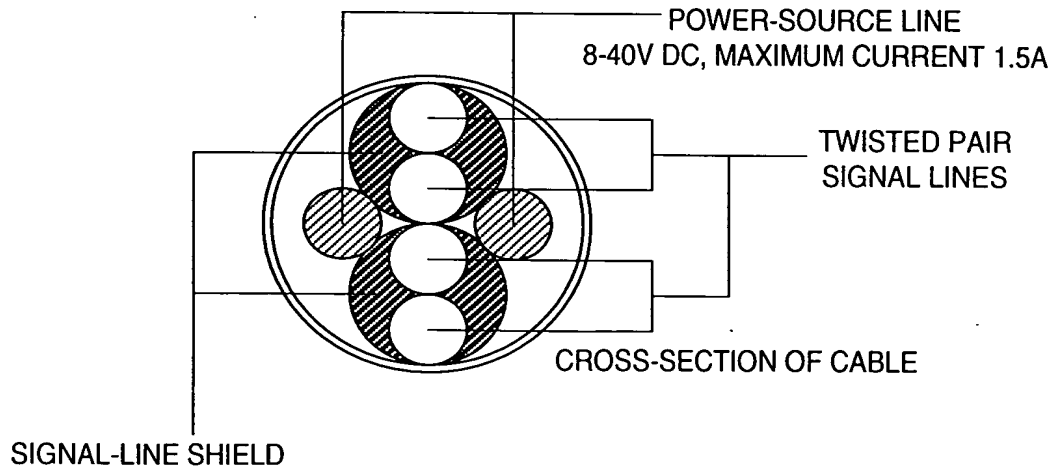


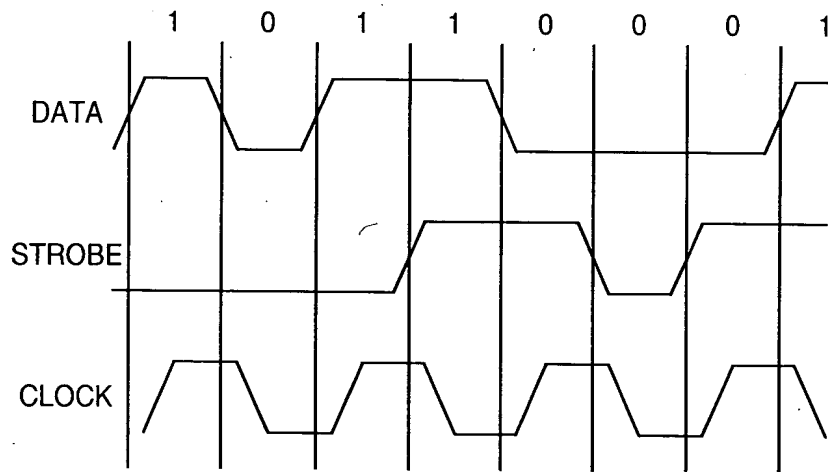
FIG. 1A



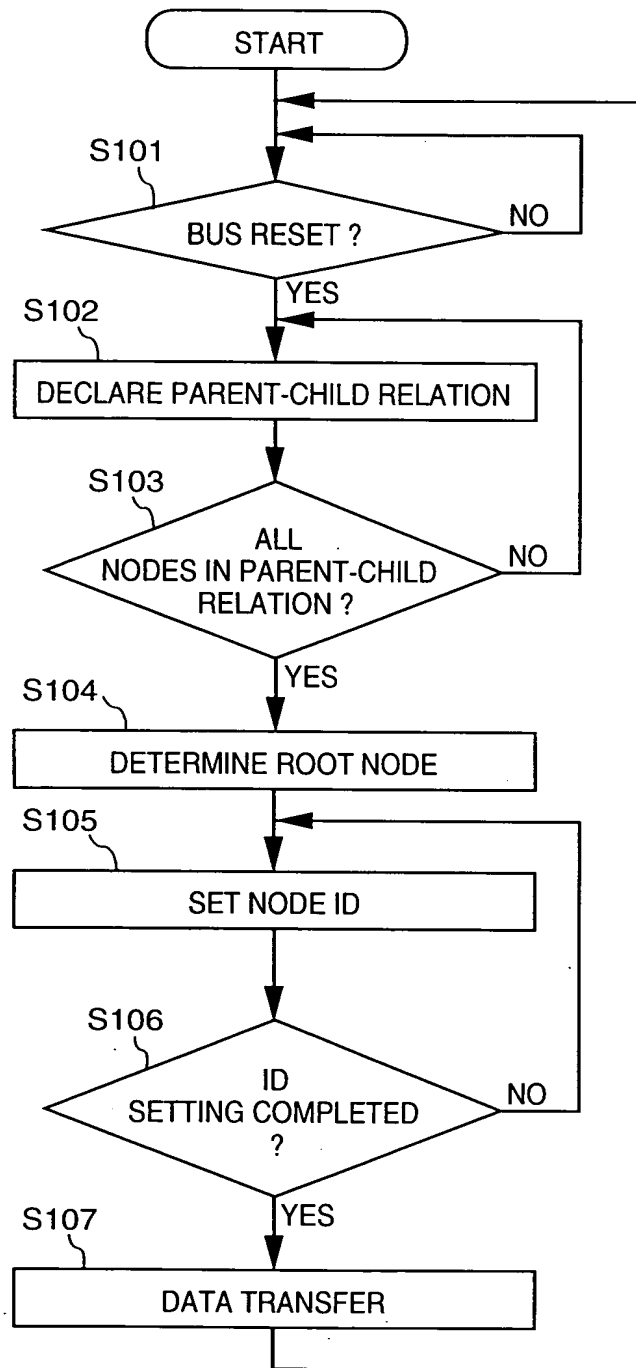
**FIG. 1B**

**FIG. 2**

**FIG. 3****FIG. 4**

**FIG. 5**

CLOCK : EXCLUSIVE-OR SIGNAL BETWEEN DATA AND STROBE

**FIG. 6**

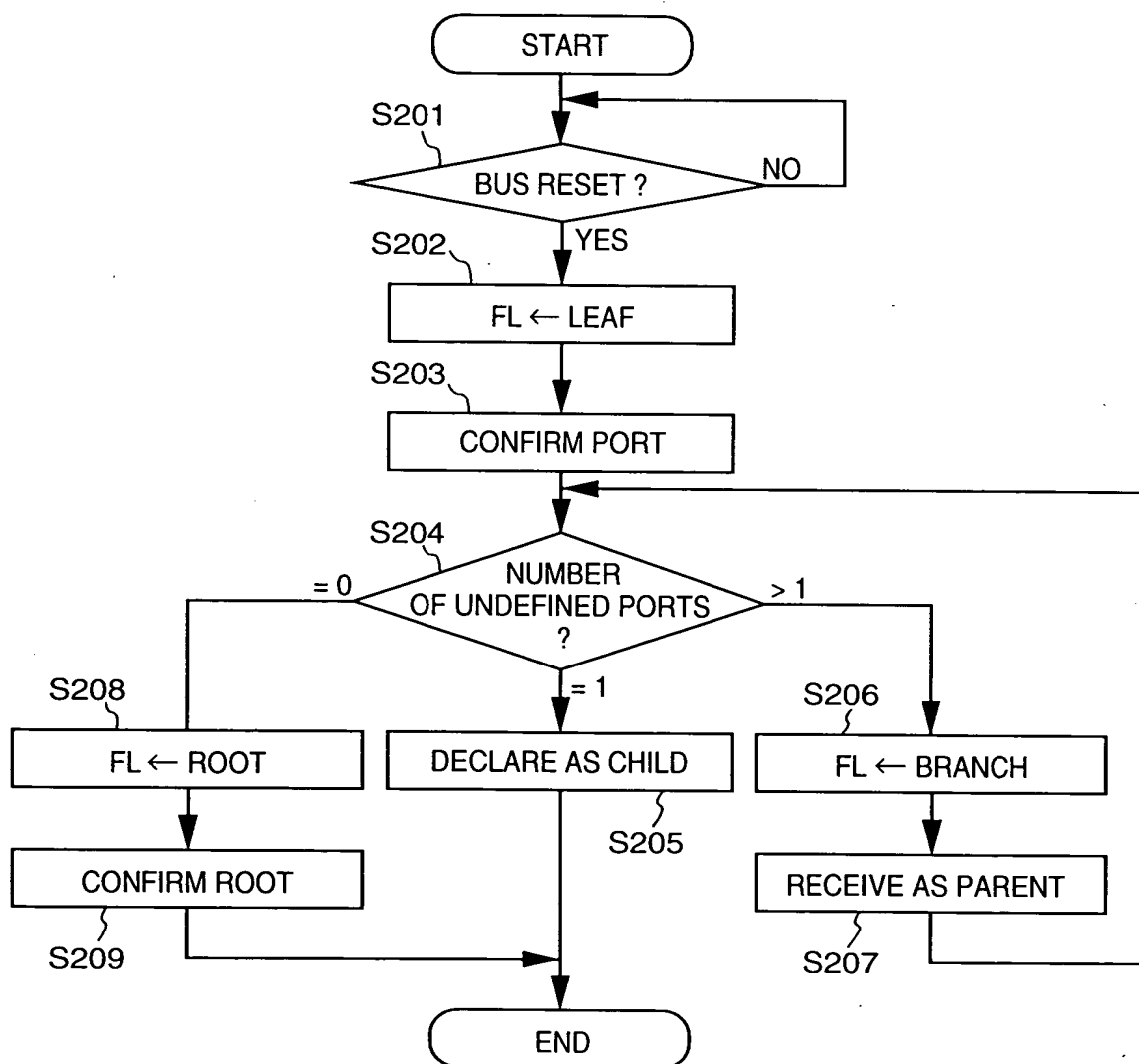
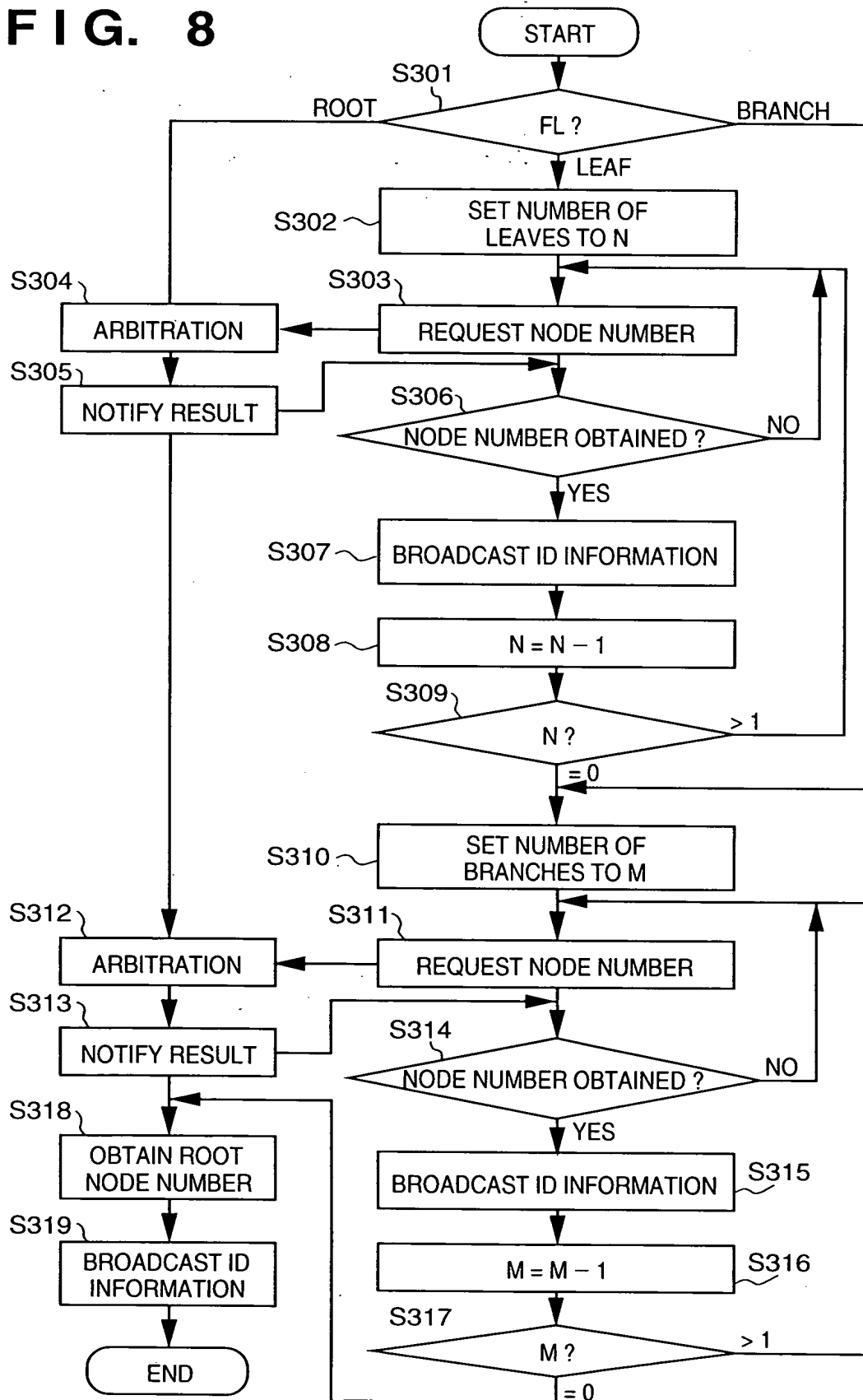
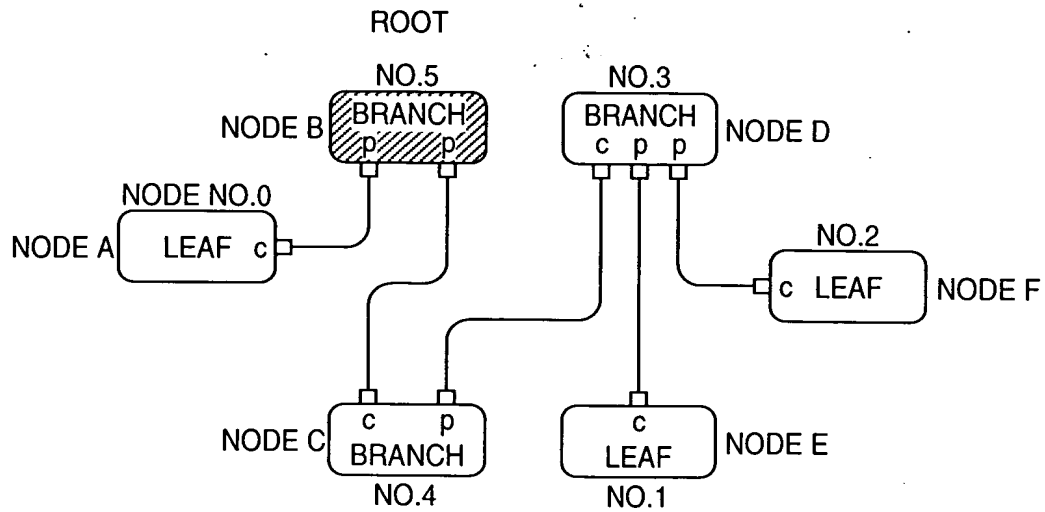
**FIG. 7**

FIG. 8





**FIG. 9**

BRANCH : NODE WITH TWO OR MORE NODE CONNECTIONS

LEAF : NODE WITH SINGLE PORT CONNECTION

□ : PORT

c : PORT CORRESPONDING TO CHILD NODE

p : PORT CORRESPONDING TO PARENT NODE

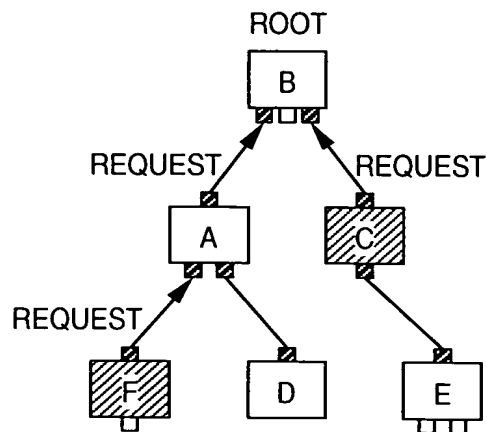
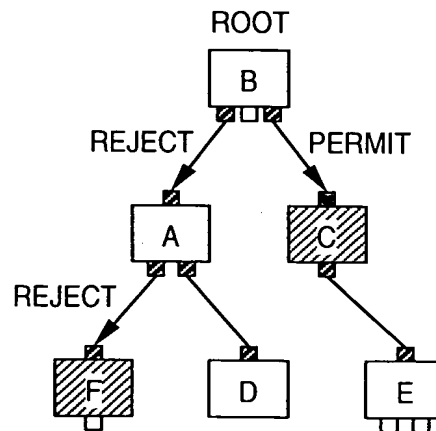
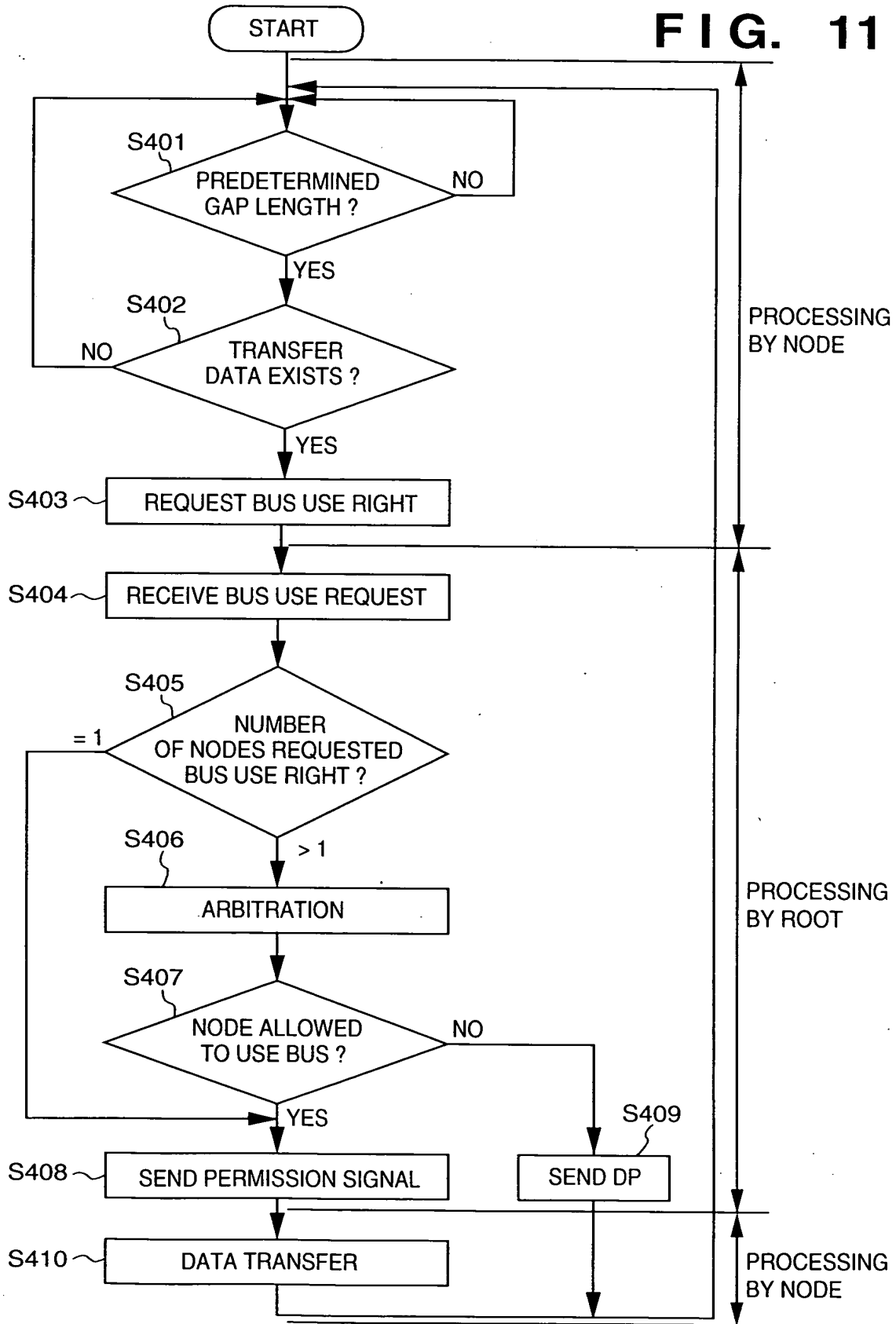
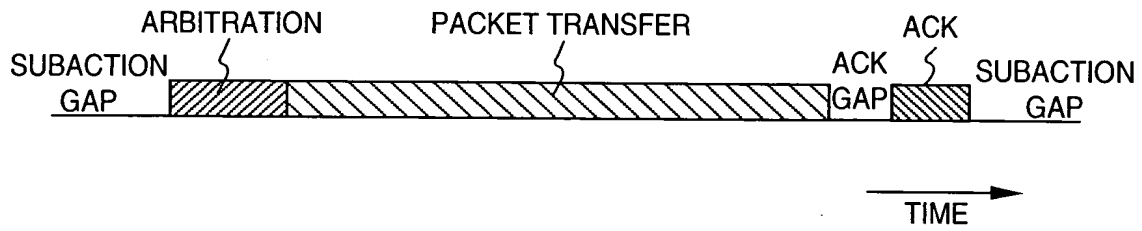
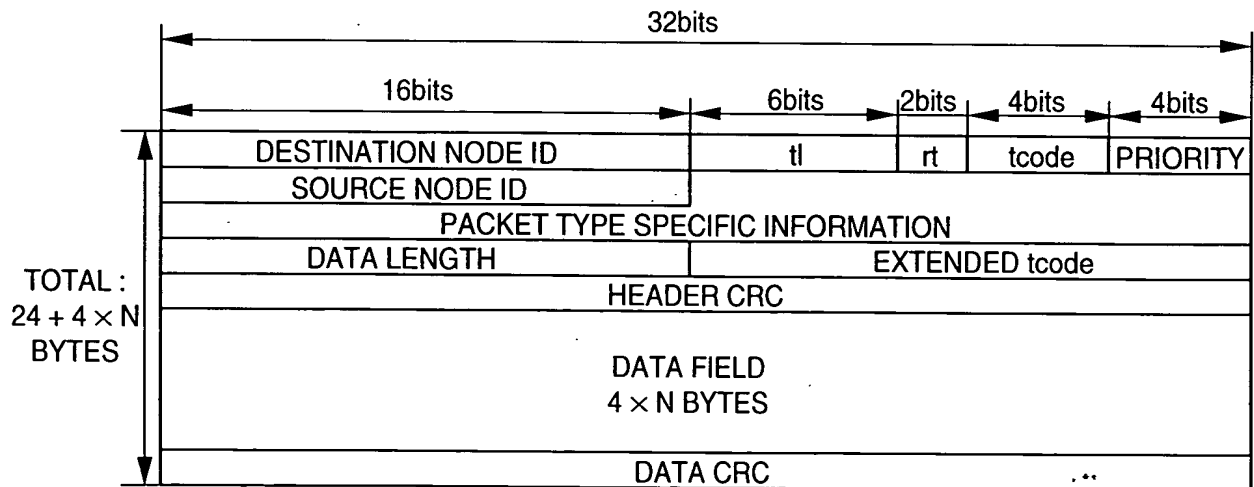
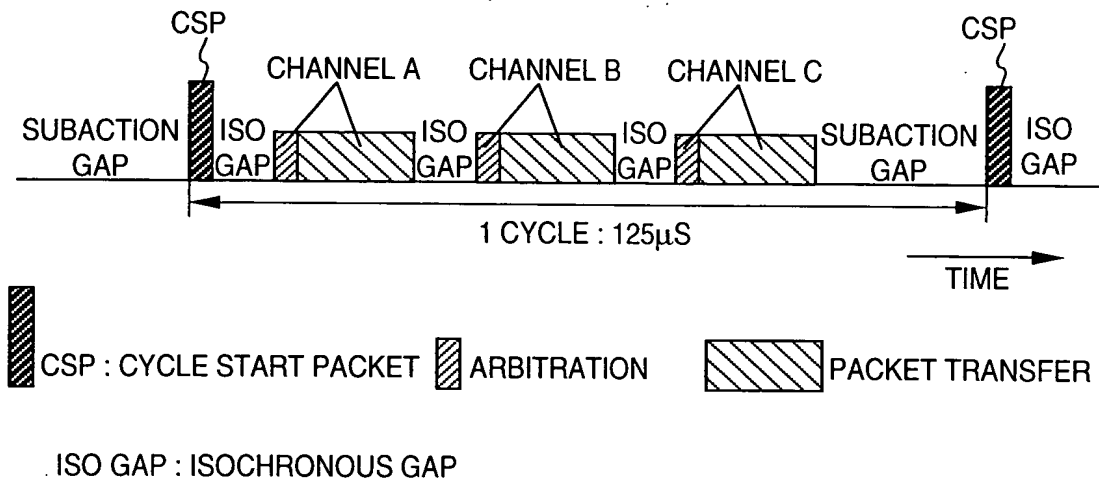
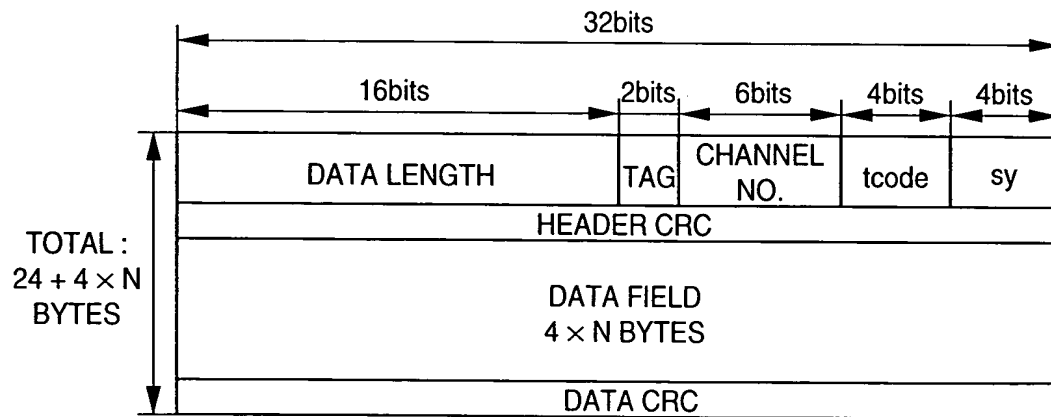
**FIG. 10A****FIG. 10B**

FIG. 11

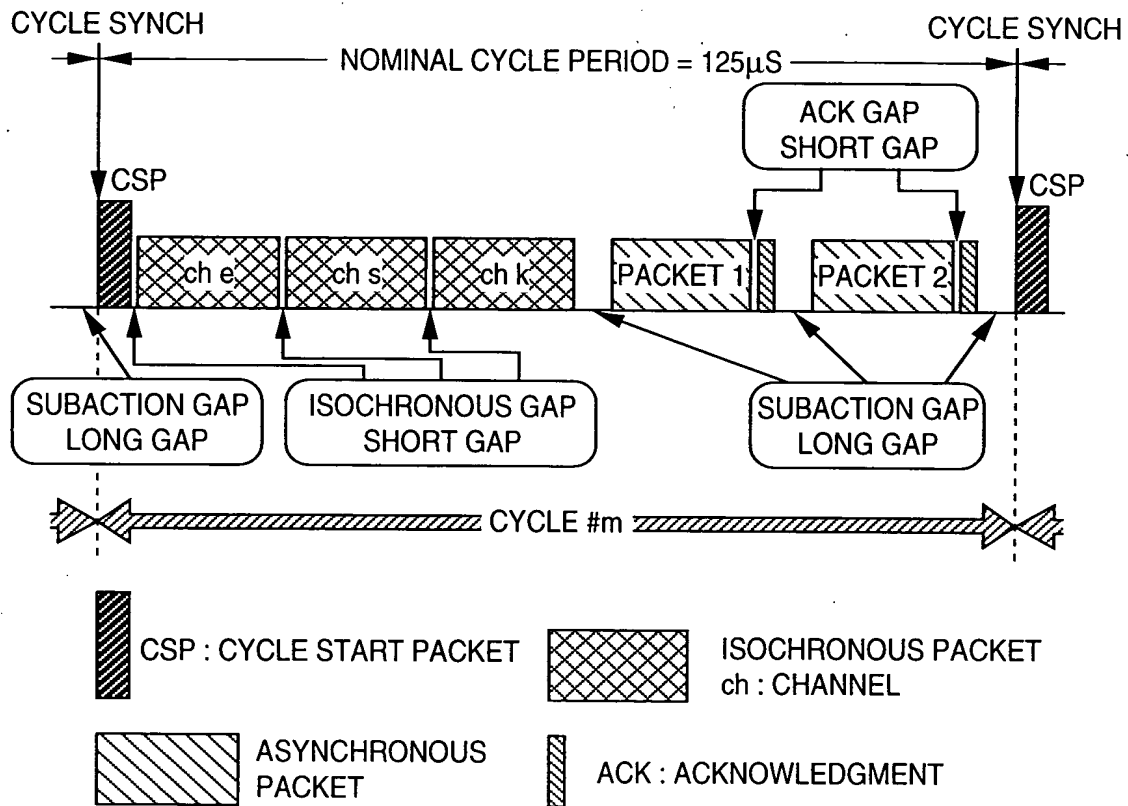
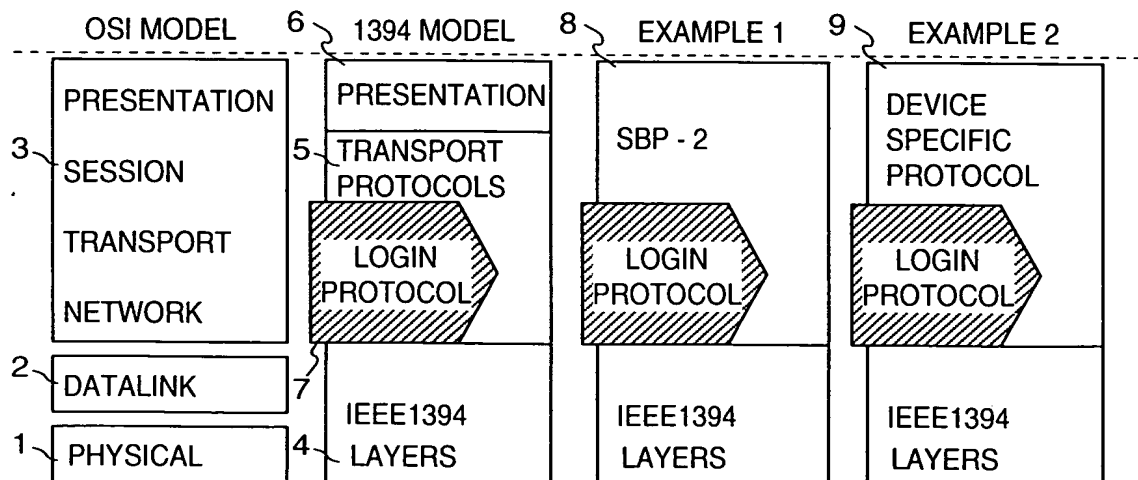


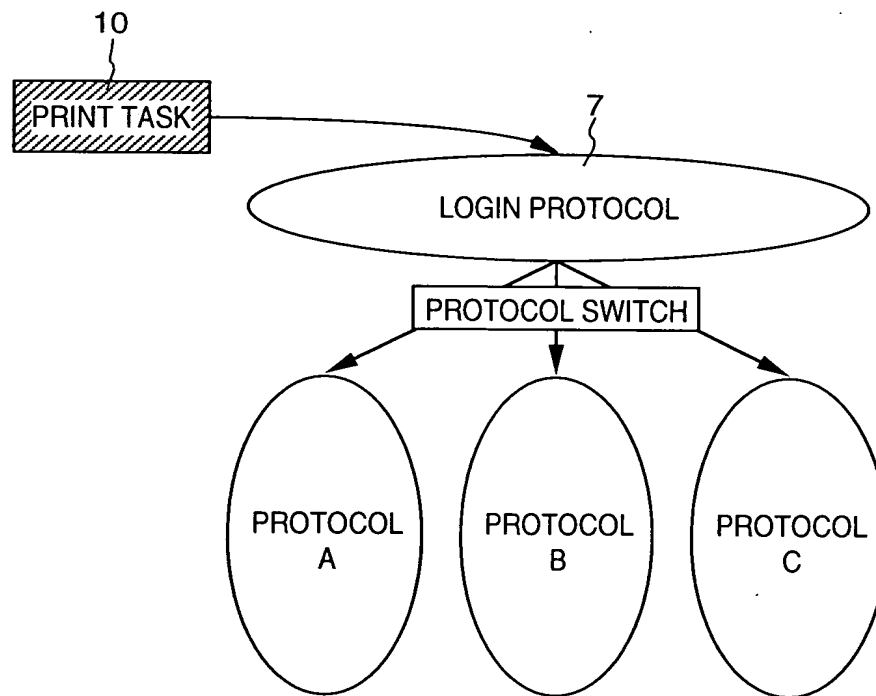
**FIG. 12****FIG. 13**

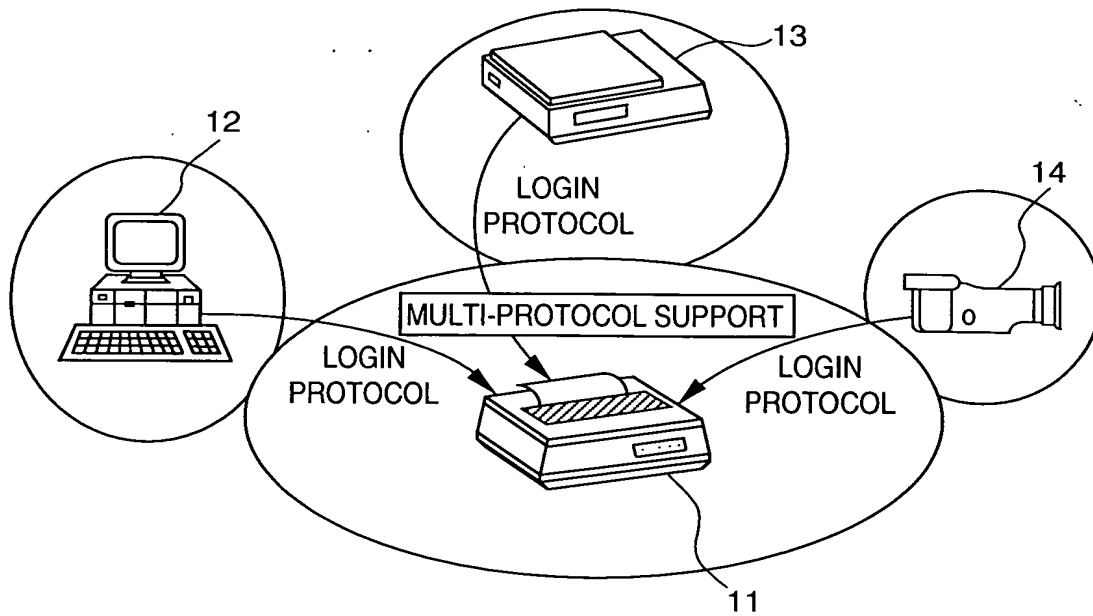
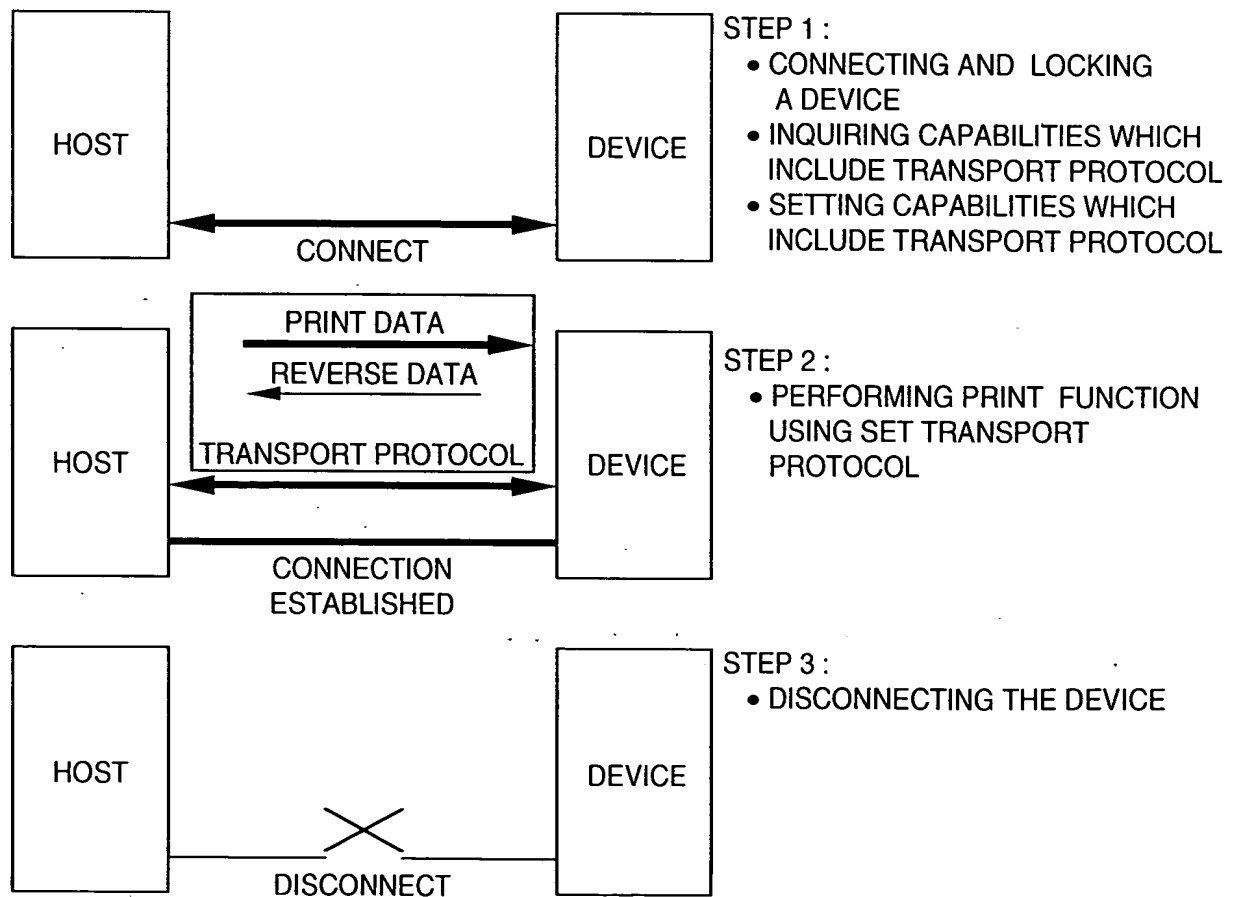
**FIG. 14****FIG. 15A**

# FIG. 15B

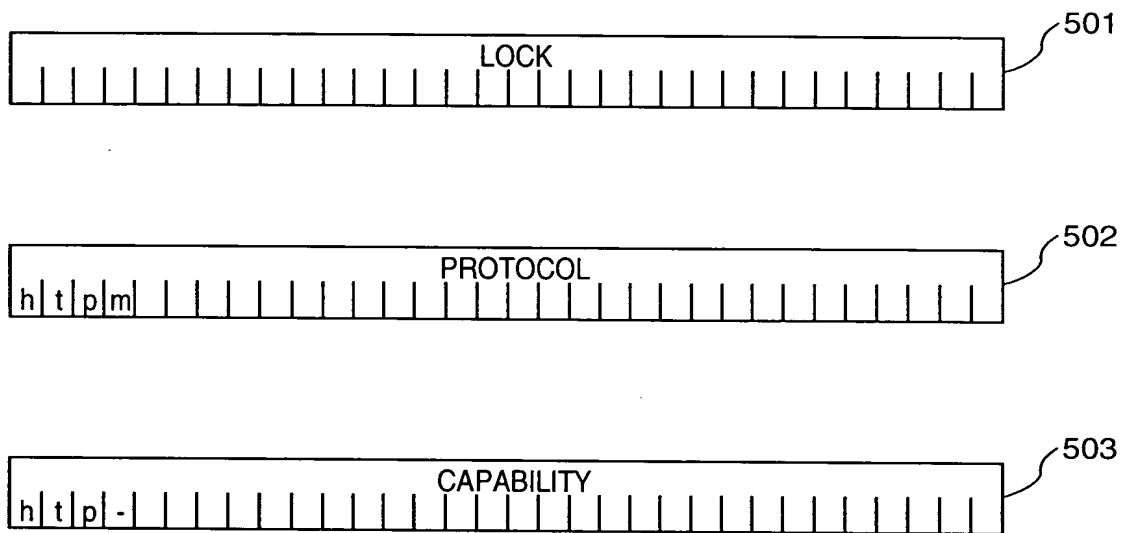
| ABBREVIATION           | NAME                                   | CONTENT   |
|------------------------|--|---|
| destination_ID         | destination identifier                 | ID OF DESTINATION NODE<br>(ASYNCHRONOUS ONLY)                             |
| t1                     | transaction label                      | LABEL INDICATING A SERIES OF<br>TRANSACTIONS (ASYNCHRONOUS ONLY)          |
| rt                     | retry code                             | CODE INDICATING RETRANSMISSION<br>STATUS (ASYNCHRONOUS ONLY)              |
| tcode                  | transaction code                       | CODE INDICATING PACKET TYPE<br>(ASYNCHRONOUS ONLY)                        |
| pri                    | priority                               | PRIORITY ORDER<br>(ASYNCHRONOUS ONLY)                                     |
| source_ID              | source identifier                      | SOURCE NODE<br>(ASYNCHRONOUS ONLY)  |
| destination_<br>offset | destination memory<br>address          | MEMORY ADDRESS OF DESTINATION<br>NODE (ASYNCHRONOUS ONLY)                 |
| rcode                  | response code                          | RESPONSE STATUS<br>(ASYNCHRONOUS ONLY)                                    |
| quadiet_data           | quadiet(4bytes) data                   | 4-BYTE LENGTH DATA<br>(ASYNCHRONOUS ONLY)                                 |
| data_length            | length of data                         | LENGTH OF data_field<br>(EXCEPT pad bytes)                                |
| extended_tcode         | extended transaction<br>code           | EXTENDED TRANSACTION CODE<br>(ASYNCHRONOUS ONLY)                          |
| chanel                 | isochronous identifier                 | IDENTIFICATION OF<br>ISOCHRONOUS PACKET                                   |
| sy                     | synchronization code                   | SYNCHRONIZATION OF VIDEO<br>IMAGE AND AUDIO INFORMATION                   |
| cycle_time_data        | contents of the<br>CYCLE_TIME register | CYCLE TIMER REGISTER VALUE<br>OF CYCLE MASTER NODE<br>(CYCLE PACKET ONLY) |
| data_field             | data + pad bytes                       | DATA STORAGE<br>(ISOCHRONOUS AND ASYNCHRONOUS)                            |
| header_CRC             | CRC for header field                   | CRC FOR HEADER  |
| data_CRC               | CRC for data field                     | CRC FOR DATA  |
| tag                    | tag label                              | ISOCHRONOUS PACKET FORMAT   |

**FIG. 16****FIG. 17**

**FIG. 18**

**FIG. 19****FIG. 20**



**FIG. 21**

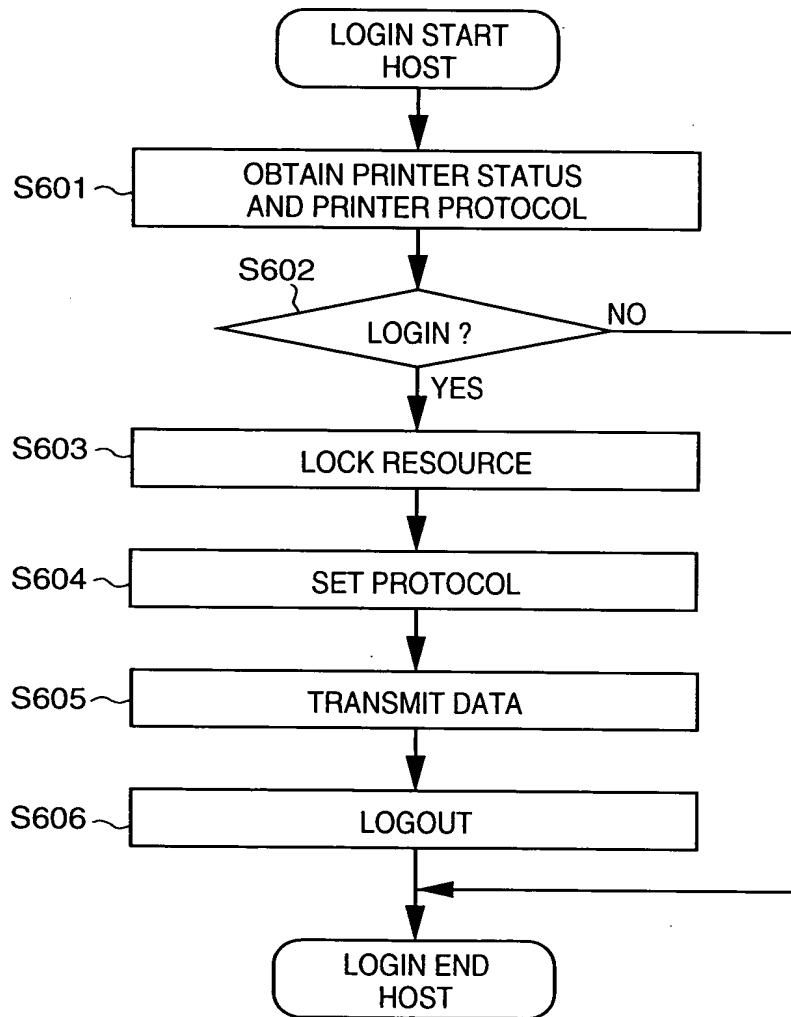
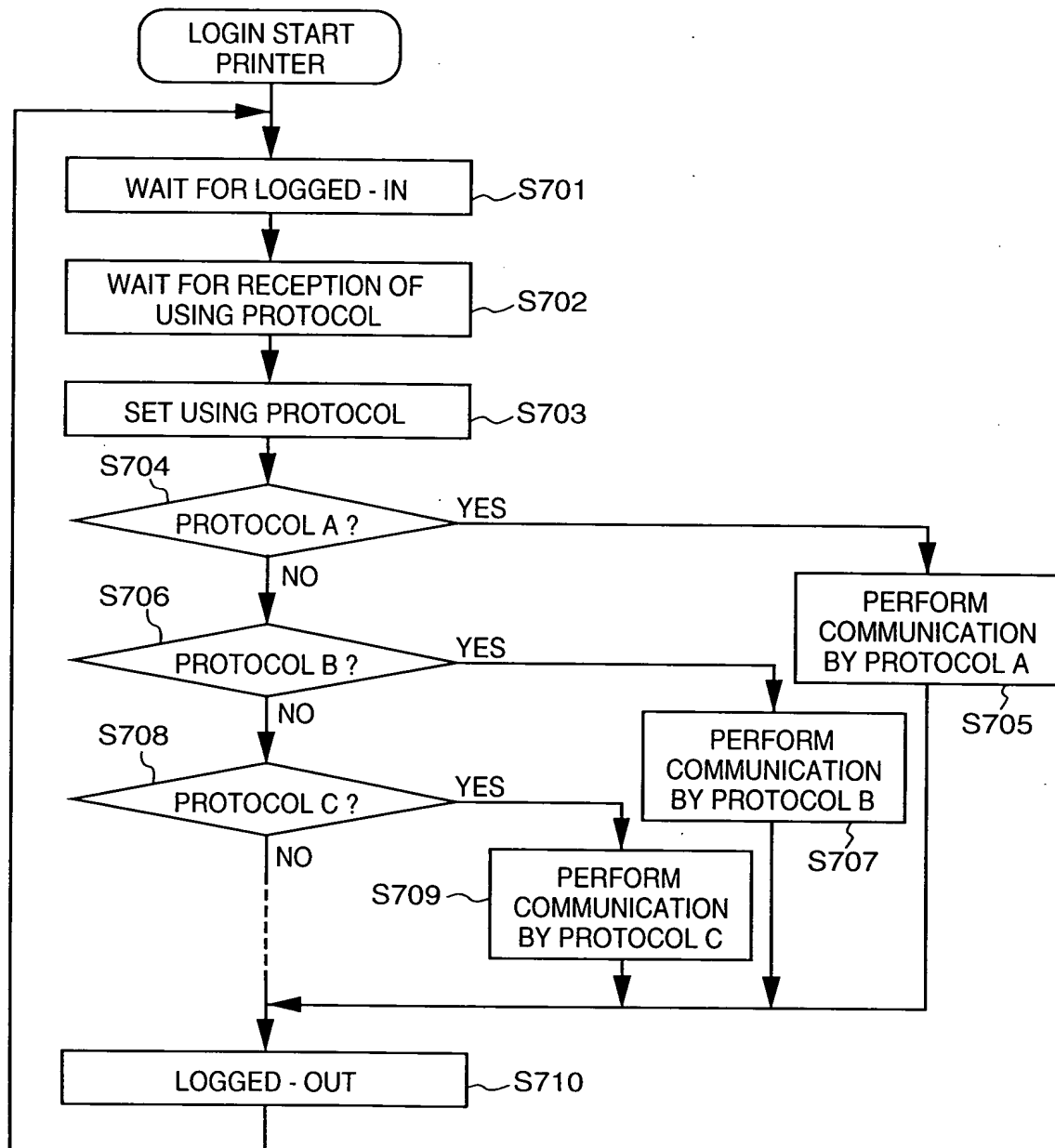
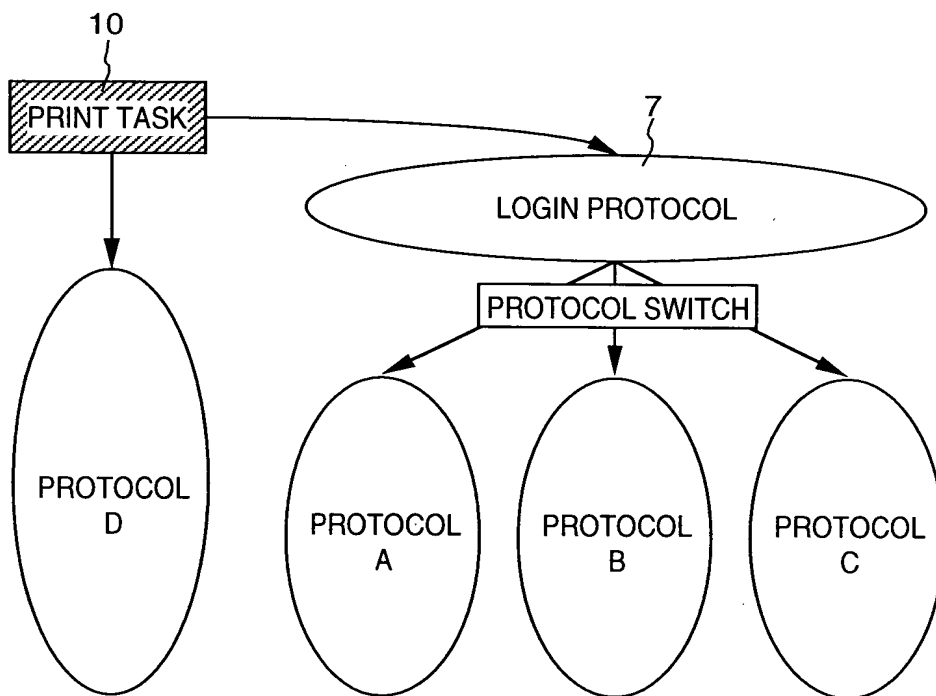
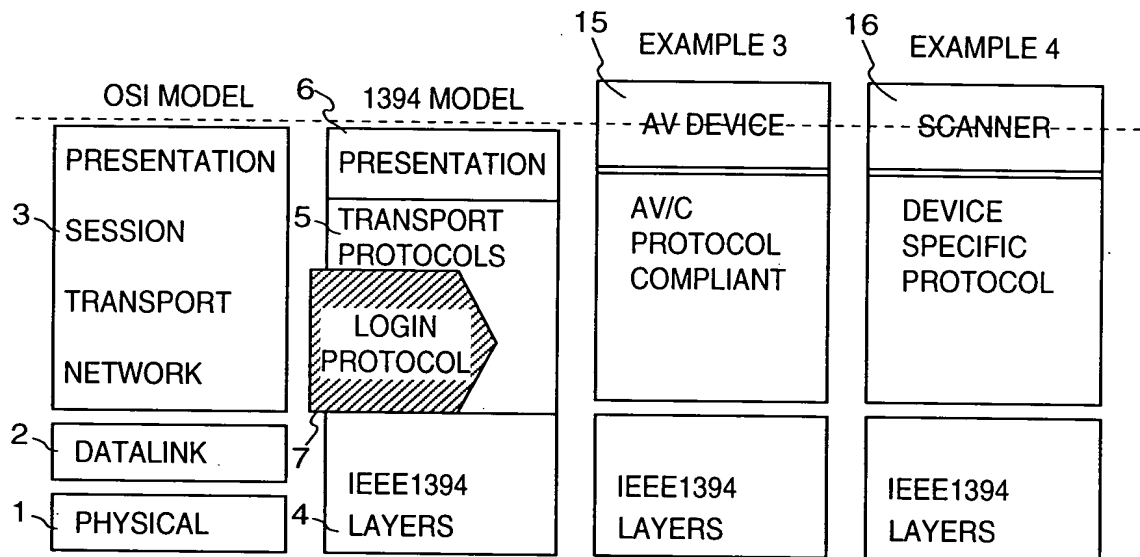
**FIG. 22**

FIG. 23



**FIG. 24**

**FIG. 25**

**FIG. 26A**  
CSR CORE REGISTER

| OFFSET<br>(hexadecimal) | REGISTER NAME  | FUNCTION  |
|-------------------------|--|---|
| 000                     | STATE_CLEAR  | INFORMATION ON STATUS AND CONTROL                         |
| 004                     | STATE_SET  | INFORMATION ON WRITE ENABLE/DISABLE STATUS OF STATE_CLEAR |
| 008                     | NODE_IDS   | BUS ID + NODE ID  |
| 00C                     | RESET_START  | TO RESET BUS BY WRITING INTO THIS AREA                    |
| 010~014                 | INDIRECT_ADDRESS,<br>INDIRECT_DATA                                     | REGISTER TO ACCESS ROM AREA GREATER THAN 1KB              |
| 018~01C                 | SPLIT_TIMEOUT  | TIMER VALUE TO DETECT TIME-OUT OF SPLIT TRANSACTION       |
| 020~02C                 | ARGUMENT, TEST_START,<br>TEST_STATUS                                   | REGISTER FOR DIAGNOSIS                                    |
| 030~04C                 | UNITS_BASE, UNITS_BOUND,<br>MEMORY_BASE, MEMORY_BOUND                  | NOT INSTALLED IN IEEE 1394                                |
| 050~054                 | INTERRUPT_TARGET,<br>INTERRUPT_MASK                                    | REGISTER OF INTERRUPTION NOTIFICATION                     |
| 058~07C                 | CLOCK_VALUE, CLOCK_TICK_PERIOD,<br>CLOCK_STORBE_ARRIVED,<br>CLOCK_INFO | NOT INSTALLED IN IEEE 1394                                |
| 080~0FC                 | MESSAGE_REQUEST,<br>MESSAGE_RESPONSE                                   | REGISTER FOR MESSAGE NOTIFICATION                         |
| 100~17C                 |  | RESERVATION   |
| 180~1FC                 | ERROR_LOG_BUFFER   | TO RESERVE FOR IEEE 1394                                  |

# FIG. 26B

## SERIAL BUS REGISTER

| OFFSET<br>(hexadecimal) | REGISTER NAME       | FUNCTION   |
|-------------------------|---------------------|--|
| 200                     | CYCLE_TIME          | COUNTER FOR ISOSYNCHRONOUS TRANSFER                  |
| 204                     | BUS_TIME            | REGISTER FOR TIME SYNCHRONIZATION                    |
| 208                     | POWER_FAIL_IMMINENT | REGISTER RELATING TO POWER SUPPLY                    |
| 20C                     | POWER_SOURCE        |  |
| 210                     | BUSY_TIMEOUT        | TO CONTROL RETRY IN TRANSACTION LAYER                |
| 214~218                 |                     | RESERVATION  |
| 21C                     | BUS_MANAGER_ID      | NODE ID OF BUS MANAGER                               |
| 220                     | BANDWIDTH_AVAILABLE | TO MANAGE ISOSYNCHRONOUS TRANSFER BAND               |
| 224~228                 | CHANNELS_AVAILABLE  | TO MANAGE CHANNEL NUMBER FOR ISOSYNCHRONOUS TRANSFER |
| 22C                     | MAINT_CONTROL       | REGISTER FOR DIAGNOSIS                               |
| 230                     | MAINT_UTILITY       |  |
| 234~3FC                 |                     | RESERVATION  |

**FIG. 26C**  
SERIAL-BUS NODE RESOURCE REGISTER

| OFFSET<br>(hexadecimal) | REGISTER NAME | FUNCTION                                    |
|-------------------------|---------------|---|
| 800~FFC                 |               | RESERVATION                                 |
| 1000~13FC               | TOPOLOGY-MAP  | INFORMATION ON SERIAL BUS STRUCTURE         |
| 1400~1FFC               |               | RESERVATION                                 |
| 2000~2FFC               | SPEED-MAP     | INFORMATION ON TRANSFER SPEED OF SERIAL BUS |
| 3000~FFFC               |               | RESERVATION                                 |

**FIG. 26D**  
MINIMUM FORMAT CONFIGURATION ROM

|    |           |
|----|-----------|
| 01 | VENDOR ID |
|----|-----------|



FIG. 26E

GENERAL FORMAT CONFIGURATION ROM

| LENGTH OF bus_info_block   | LENGTH OF ROM | CRC |
|--|---------------|-----|
| bus_info_block (ASCII CODE OF 1394 BUS AND INFORMATION ON WHETHER OR NOT<br>NODE HAS CAPABILITIES OF ISOCHRONOUS RESOURCE MANAGEMENT, CYCLE MASTER,<br>AND BUS MANAGEMENT) |               |     |
| root_directory (INDICATE VENDOR ID AND NODE FUNCTION)  |               |     |
| unit_directories (INDICATE UNIT TYPE AND DRIVER SOFT VERSION)  |               |     |
| root & unit_leaves   |               |     |
| vendor_dependent_information   |               |     |

FIG. 27A

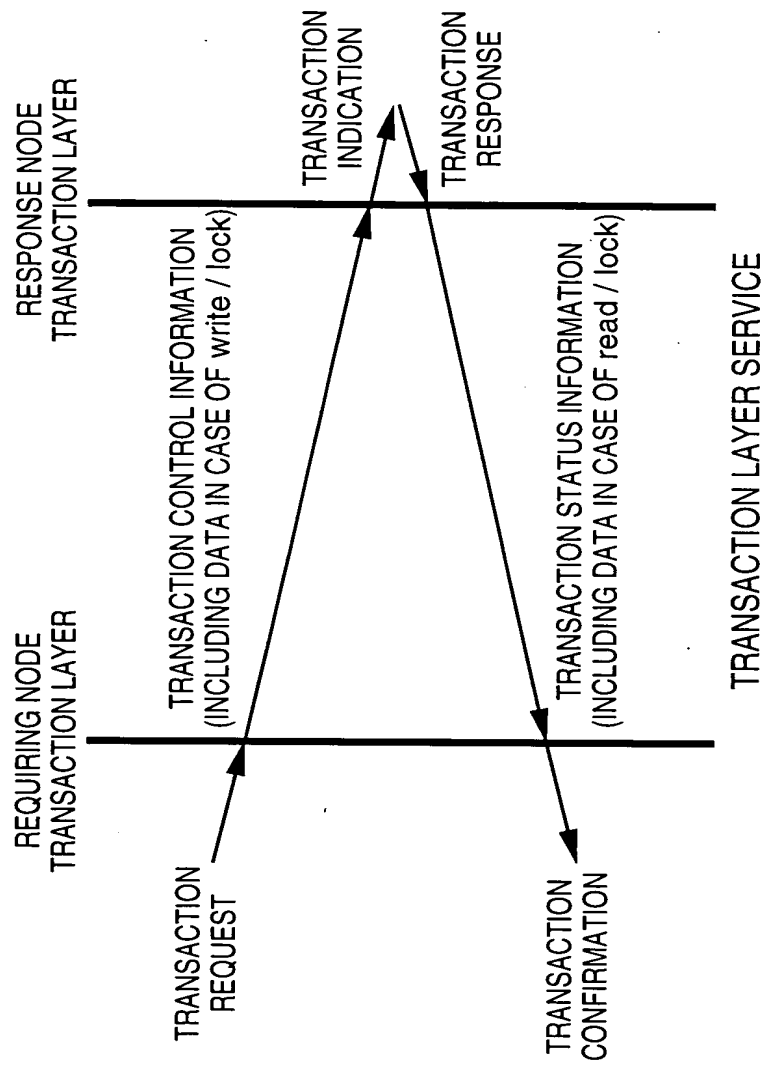


FIG. 27B

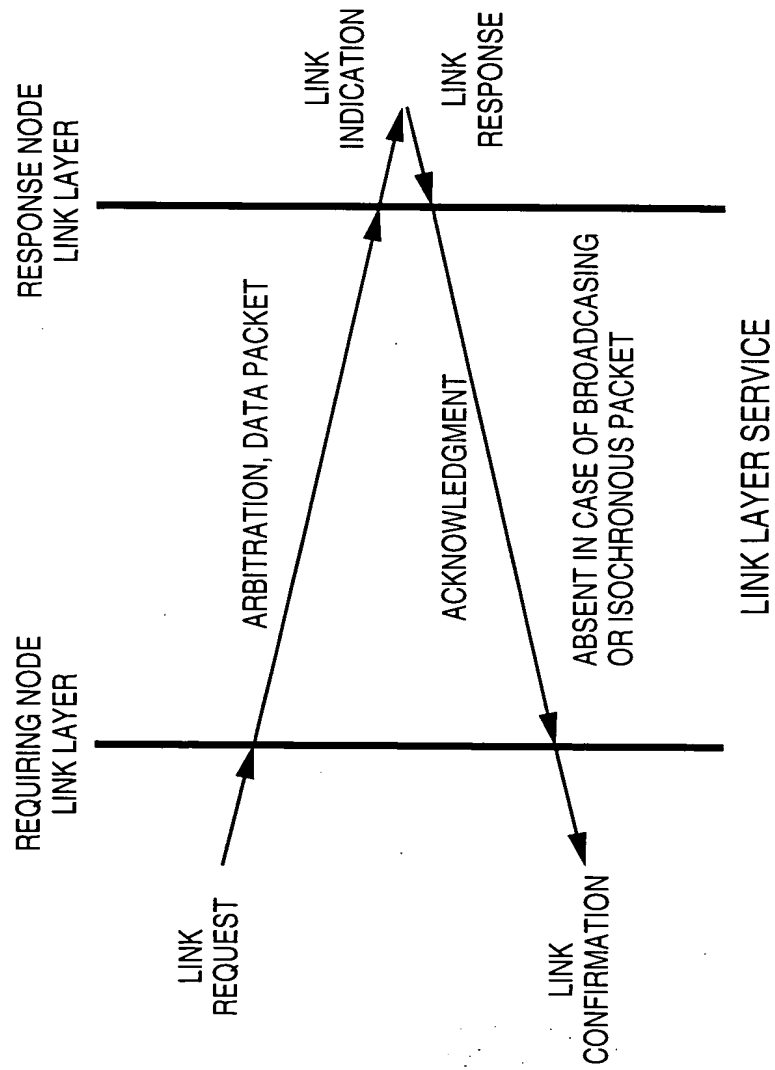


FIG. 28A

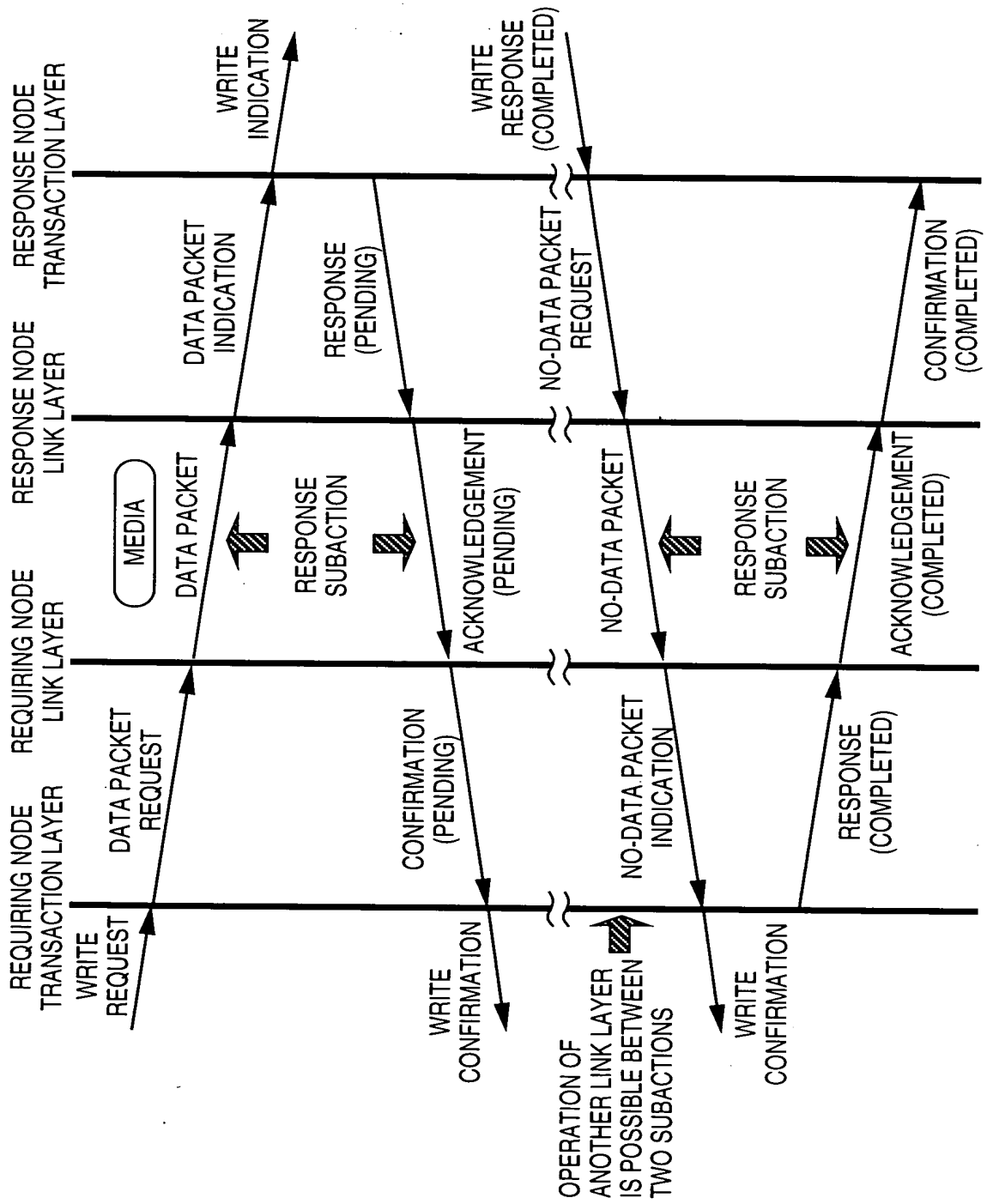
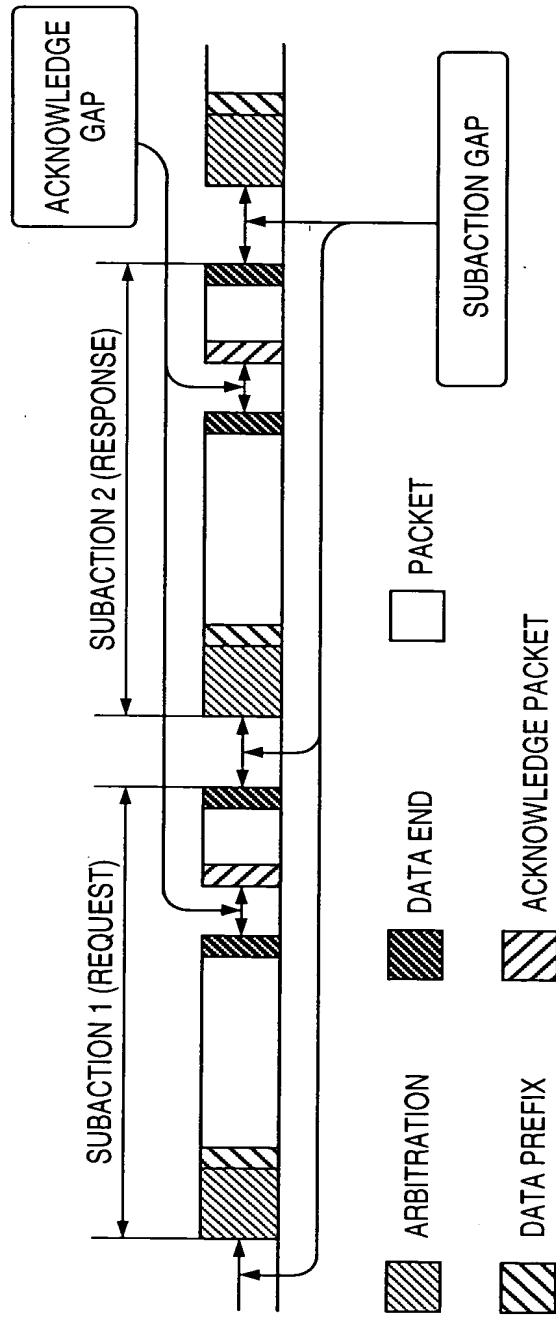


FIG. 28B



# FIG. 29

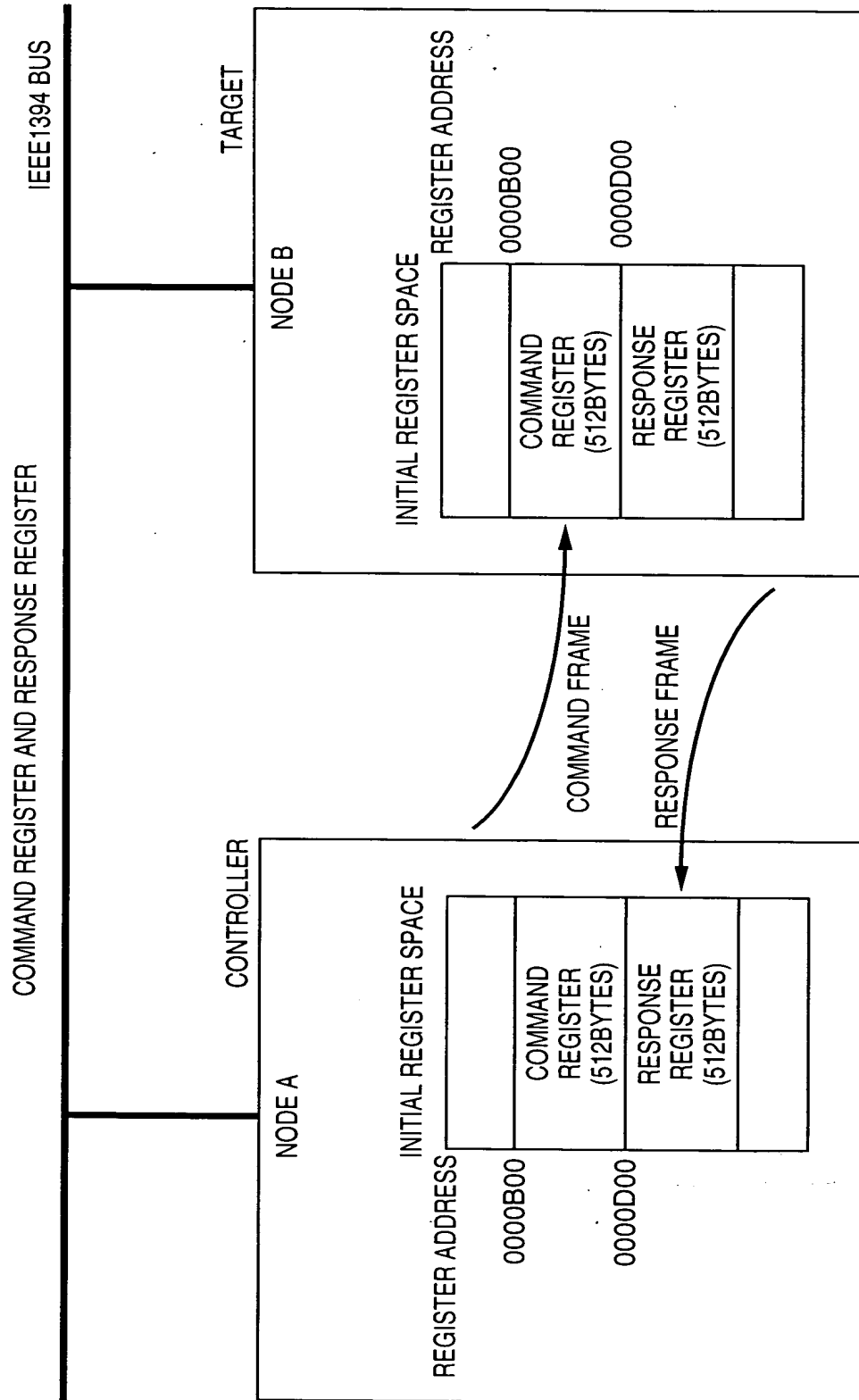


FIG. 30

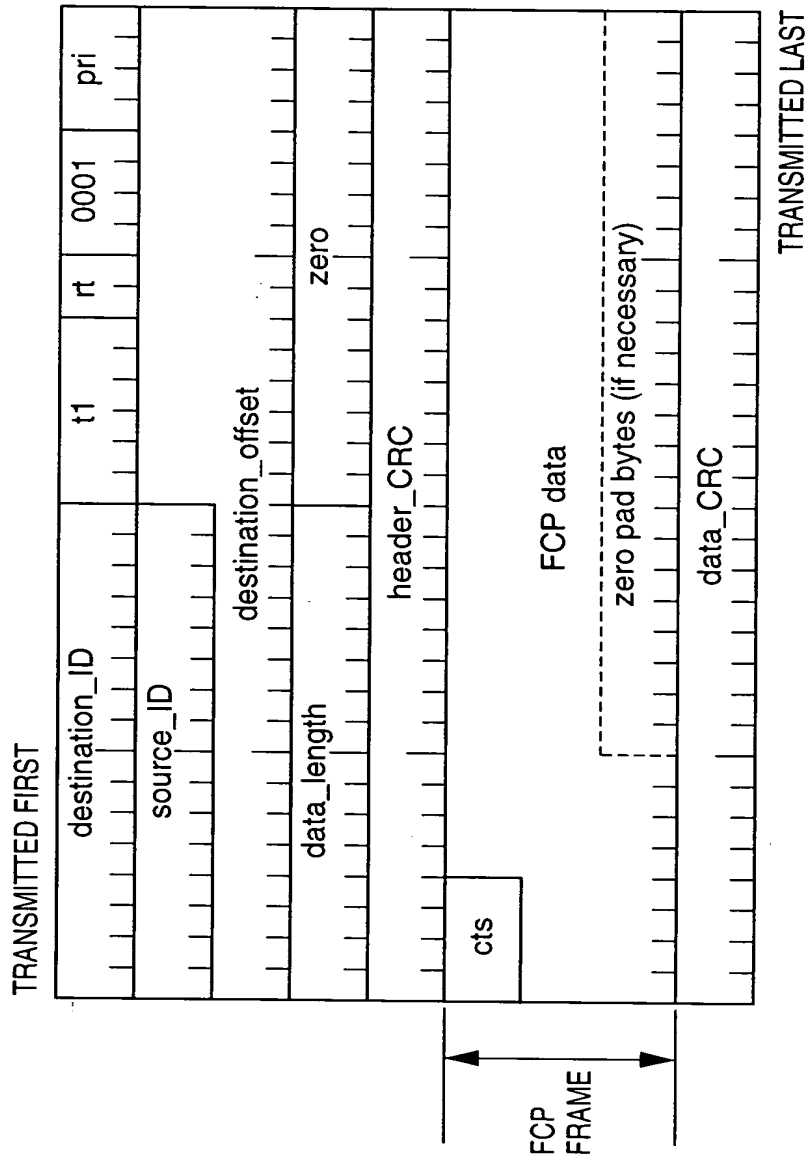


FIG. 31

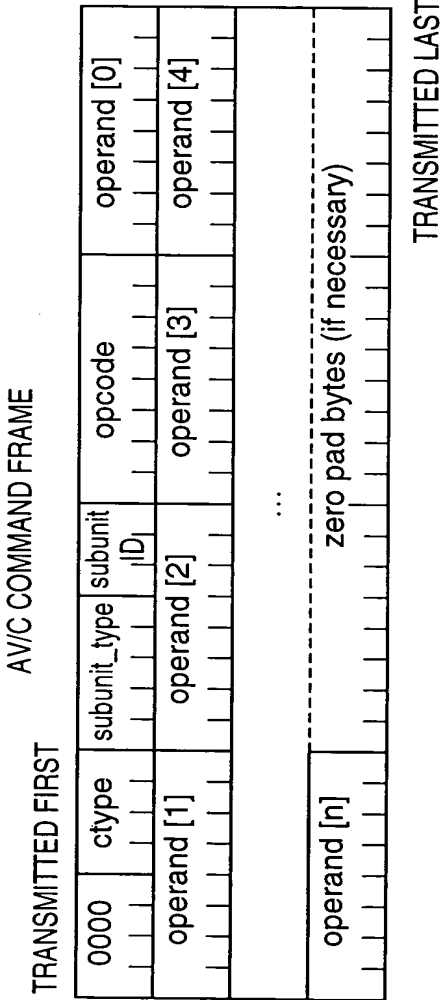
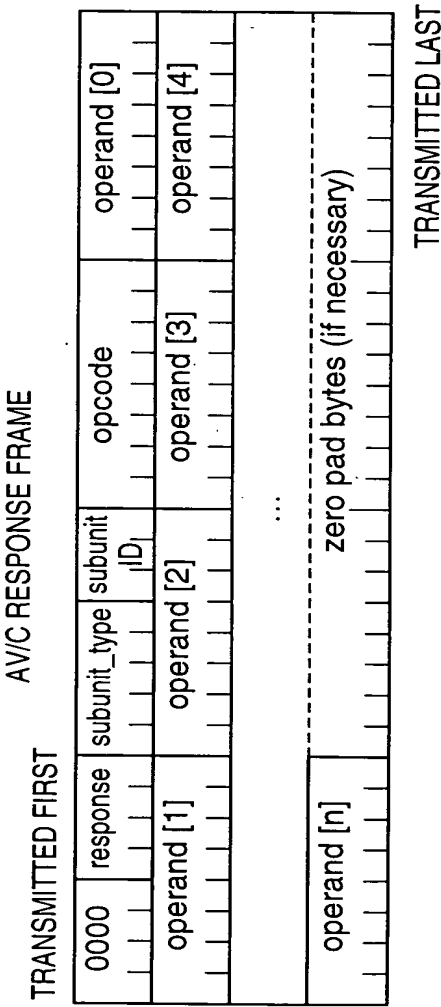
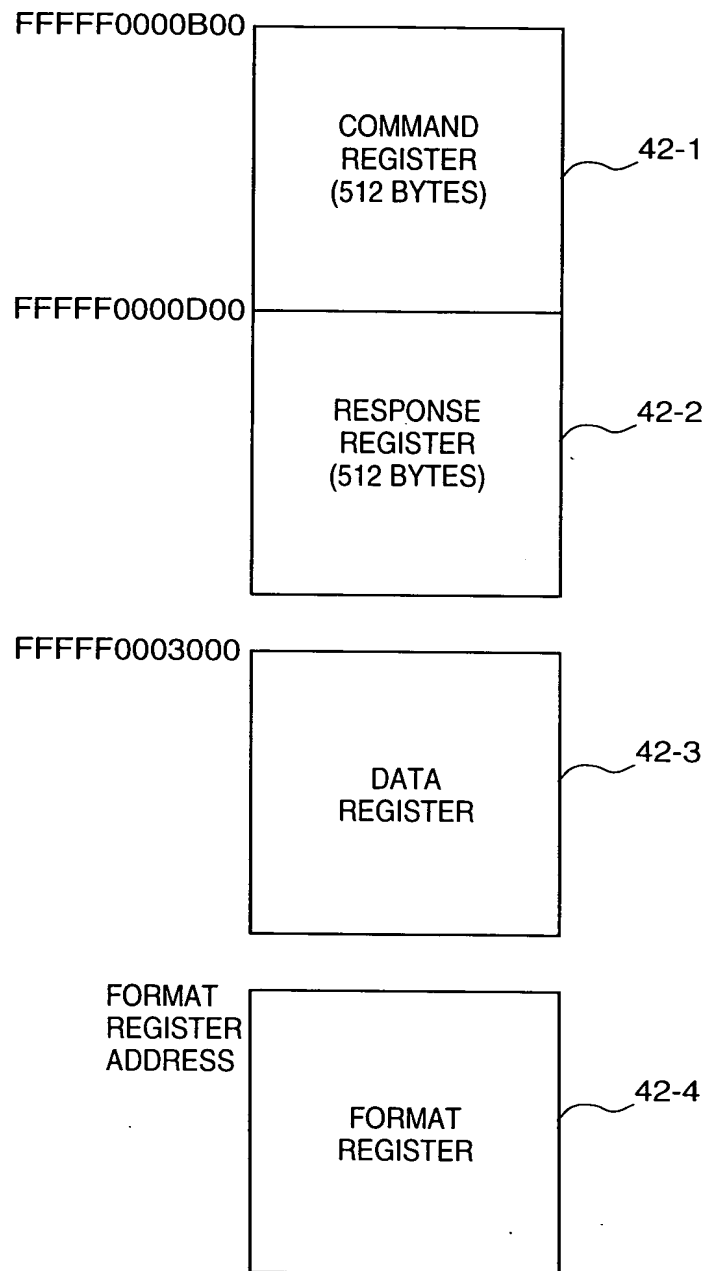


FIG. 32





**FIG. 33**

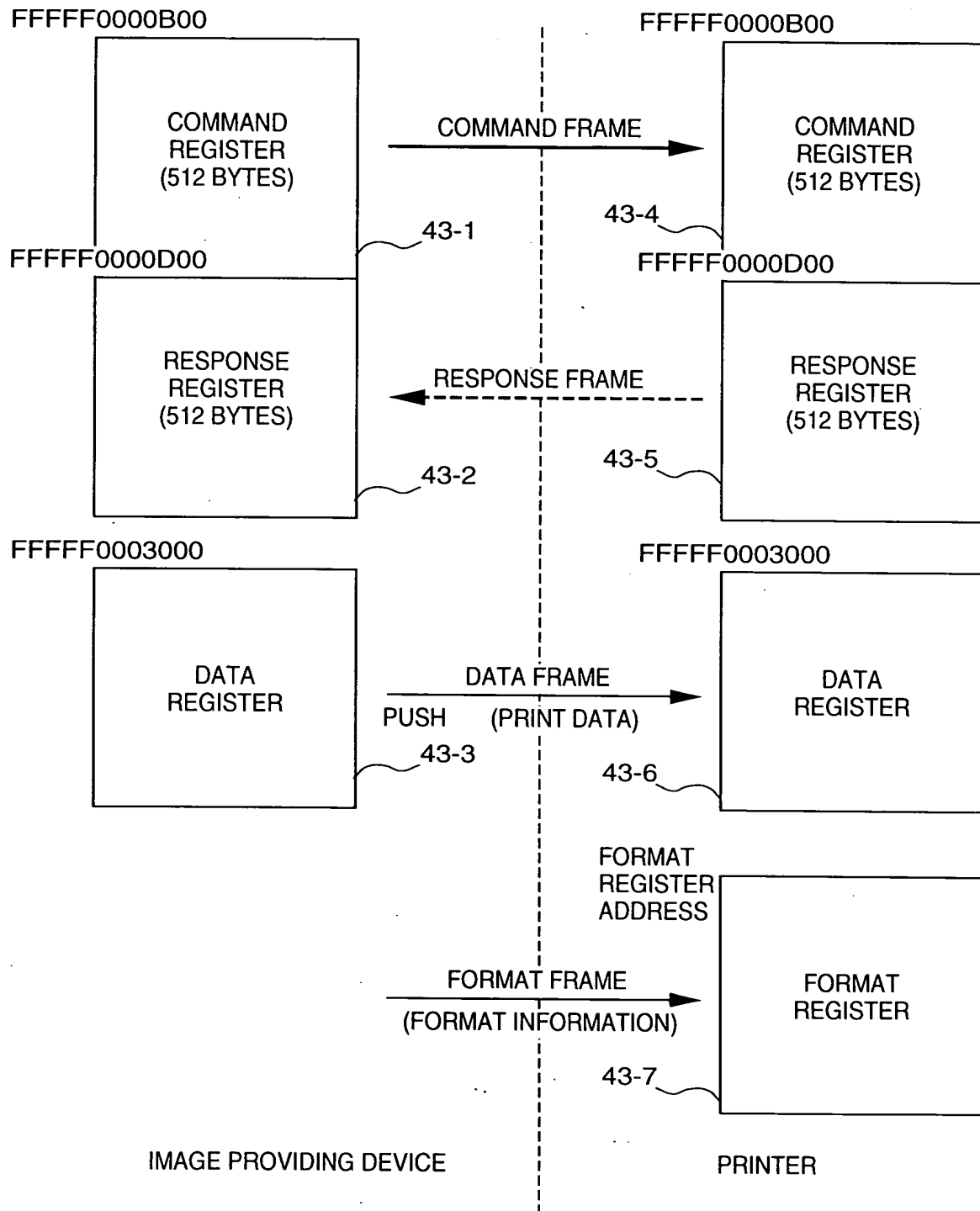
**FIG. 34**

FIG. 35

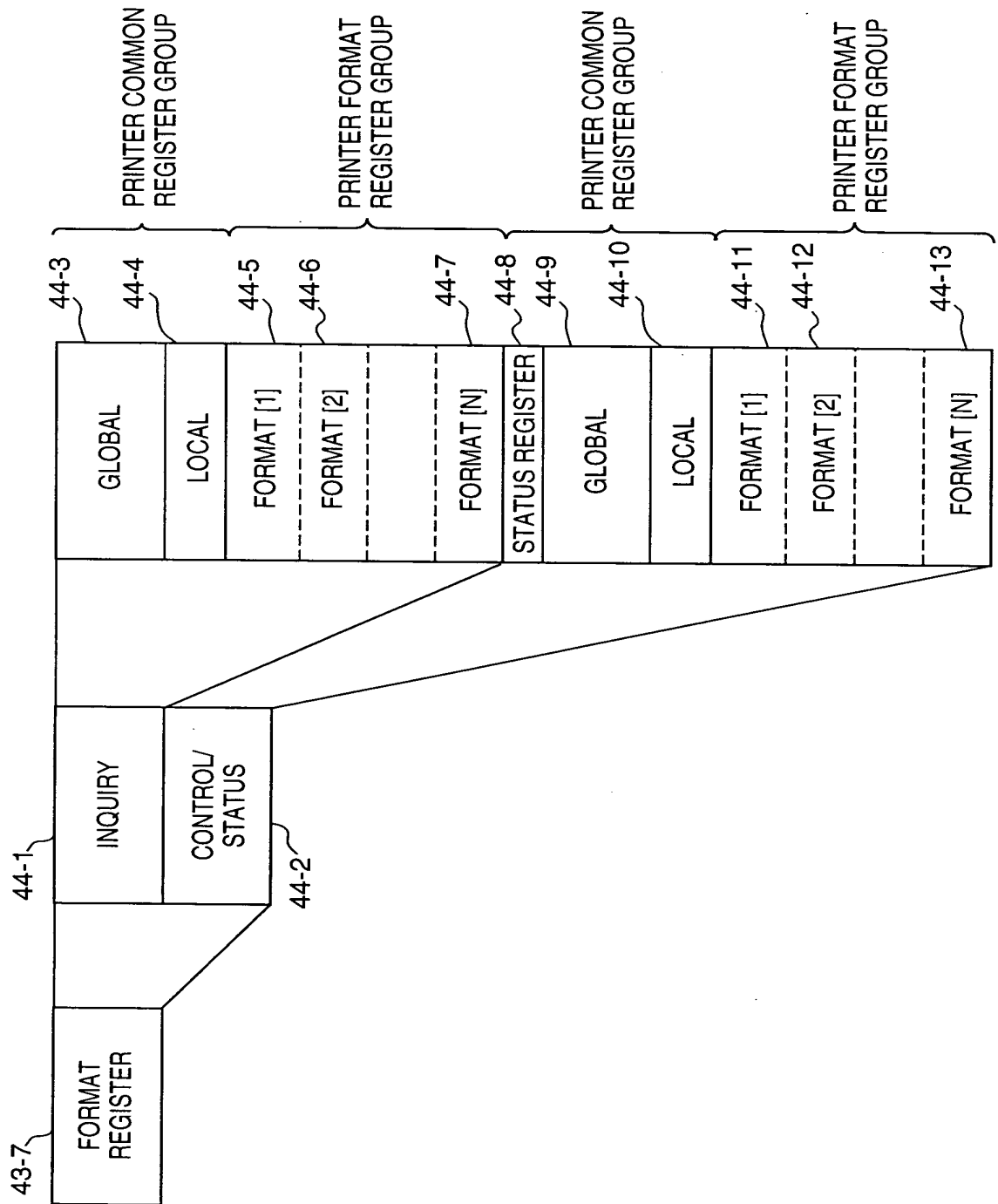
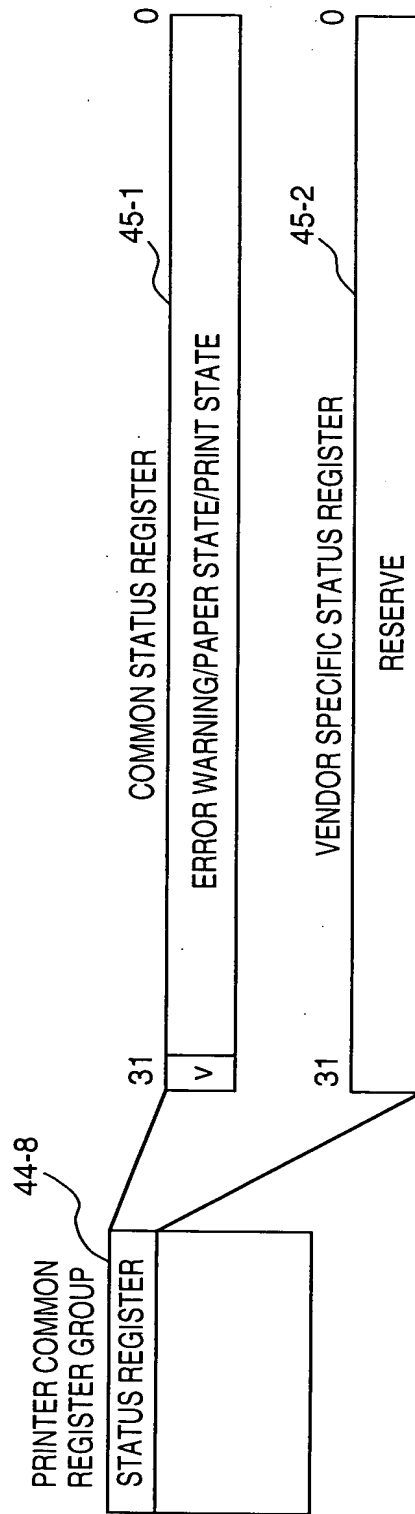
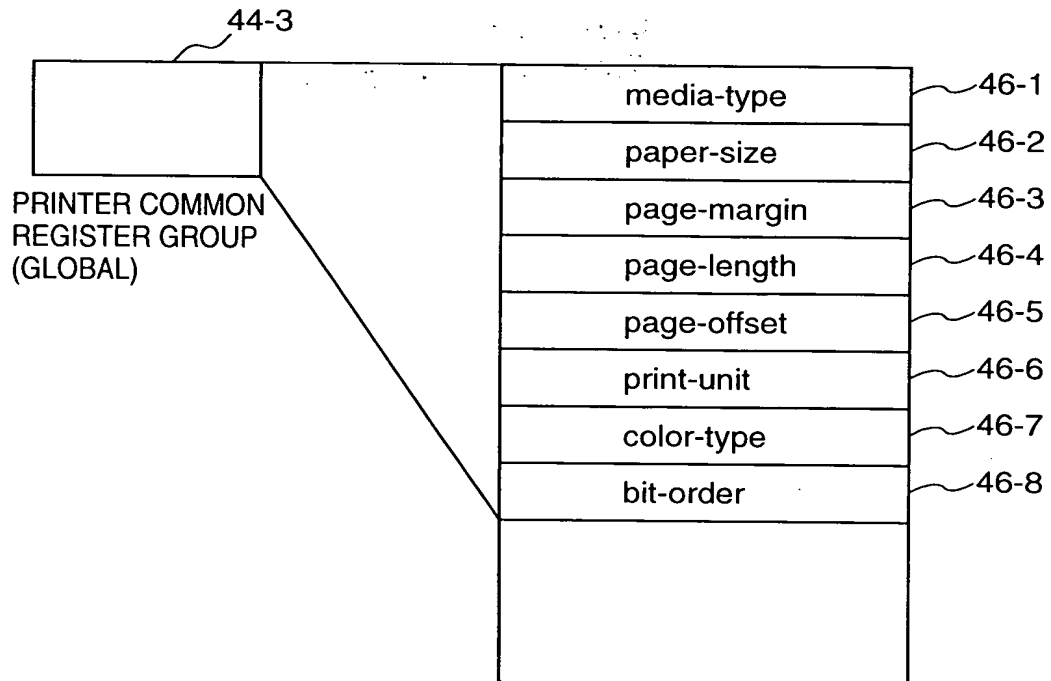
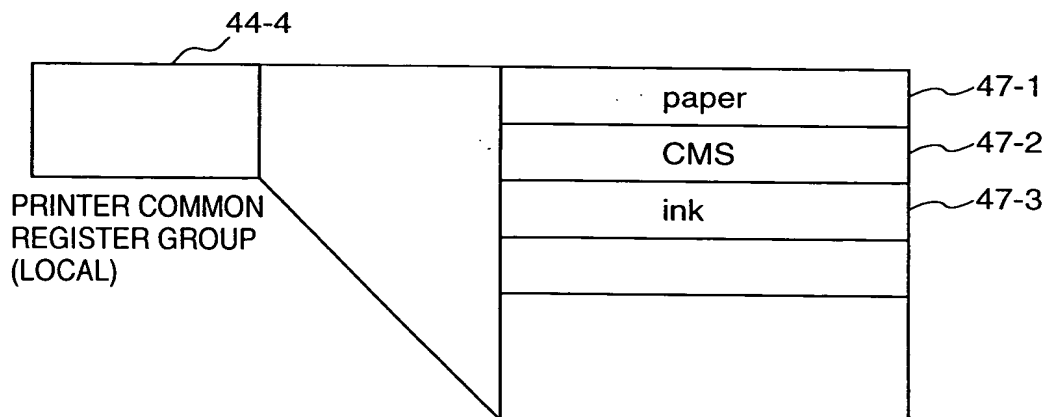
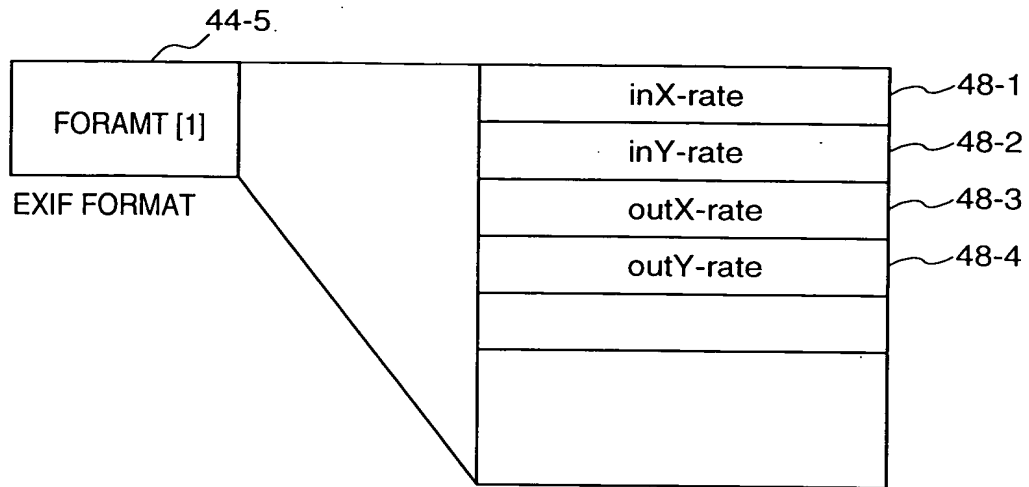
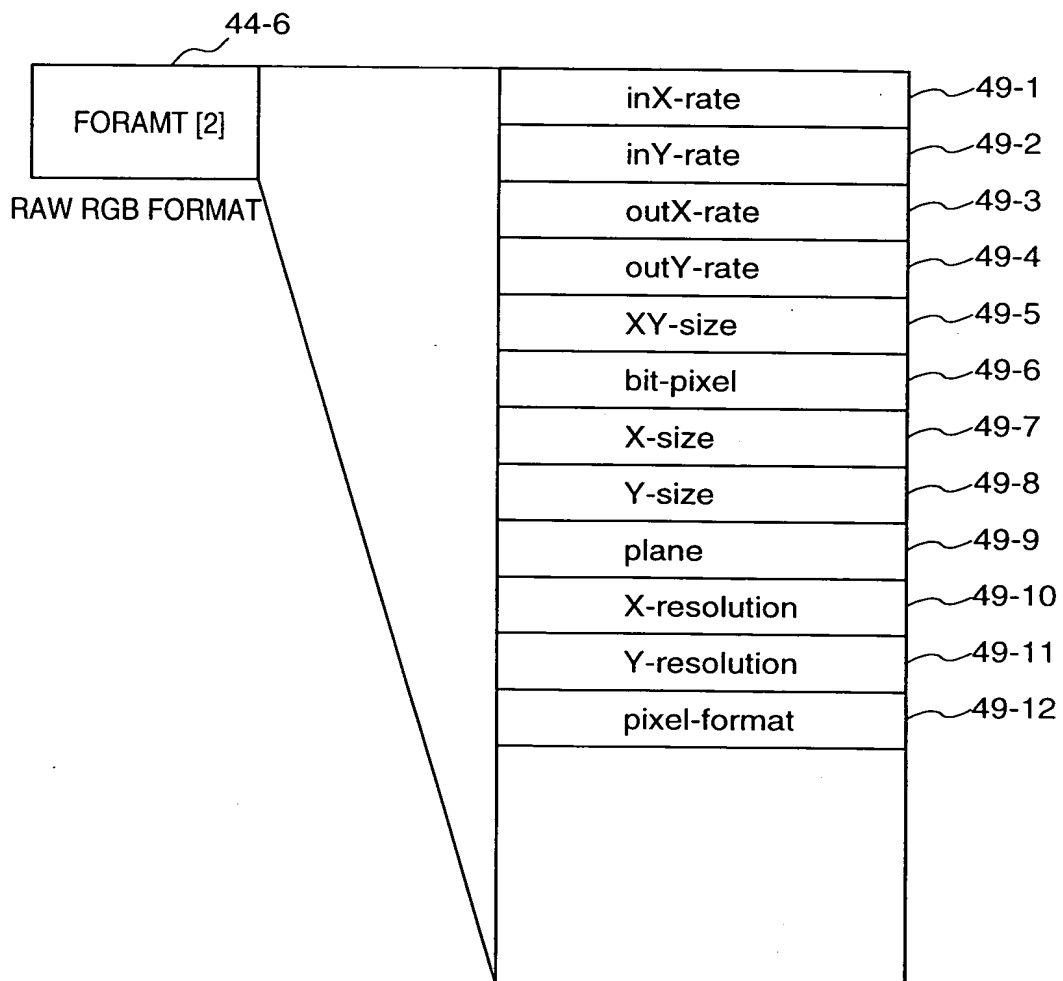


FIG. 36



**FIG. 37****FIG. 38**

**FIG. 39****FIG. 40**

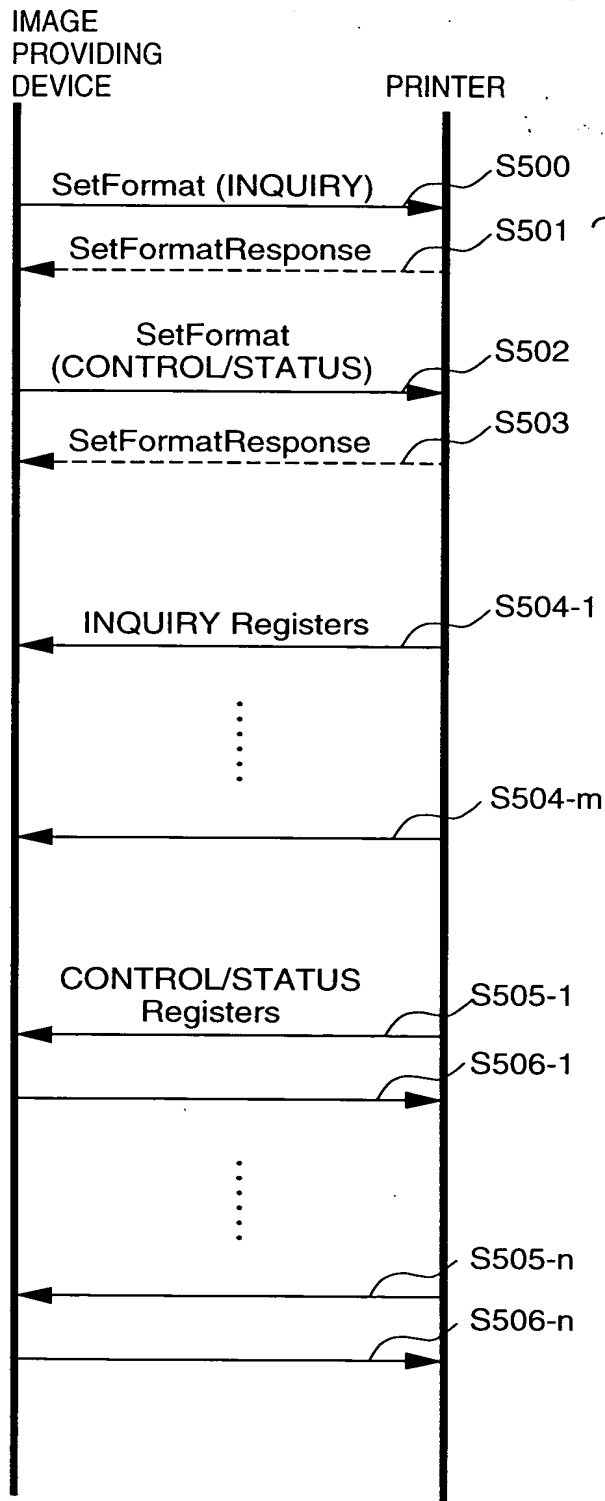
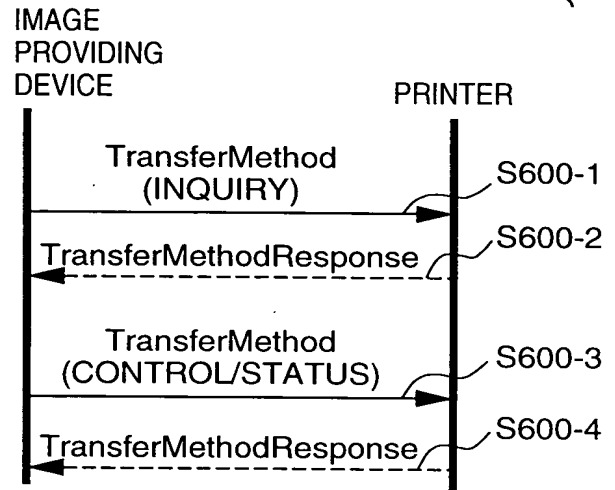
**FIG. 41**

| COMMAND CLASSIFICATION | COMMAND        | RESPONSE               |       |
|------------------------|----------------|------------------------|-------|
| STATUS                 | GetStatus      | GetStatusResponse      | 50-1  |
| CONTROL                | PrintReset     | Print ResetResponse    | 50-2  |
|                        | PrintStart     | PrintStartResponse     | 50-3  |
|                        | PrintStop      | PrintStopResponse      | 50-4  |
|                        | InsertPaper    | InsertPaperResponse    | 50-5  |
|                        | EjectPaper     | EjectPaperResponse     | 50-6  |
|                        | CopyStart      | CopyStartResponse      | 50-7  |
|                        | CopyEnd        | CopyEndResponse        | 50-8  |
|                        |                |                        | 50-9  |
| BLOCK / BUFFER         | BlockSize      | BlockSizeResponse      | 50-10 |
|                        | BlockAddress   | BlockAddressResponse   | 50-11 |
|                        | FreeBlock      | FreeBlockResponse      | 50-12 |
|                        | WriteBlocks    | WriteBlocksResponse    | 50-13 |
|                        | BufferConfig   | BufferConfigResponse   | 50-14 |
|                        | SetBuffer      | SetBufferResponse      | 50-15 |
| CHANNEL                | OpenChannel    | OpenChannelResponse    | 50-16 |
|                        | CloseChannel   | CloseChannelResponse   | 50-17 |
| TRANSFER               | TransferMethod | TransferMethodResponse | 50-18 |
| FORMAT                 | SetFormat      | SetFormatResponse      | 50-19 |
| LOG-IN                 | Login          | LoginResponse          | 50-20 |
|                        | Logout         | LogoutResponse         | 50-21 |
|                        | Reconnect      | ReconnectResponse      | 50-22 |
| DATA                   | WriteBlock     |                        | 50-23 |
|                        | WriteBuffer    |                        | 50-24 |
|                        | PullBuffer     |                        |       |

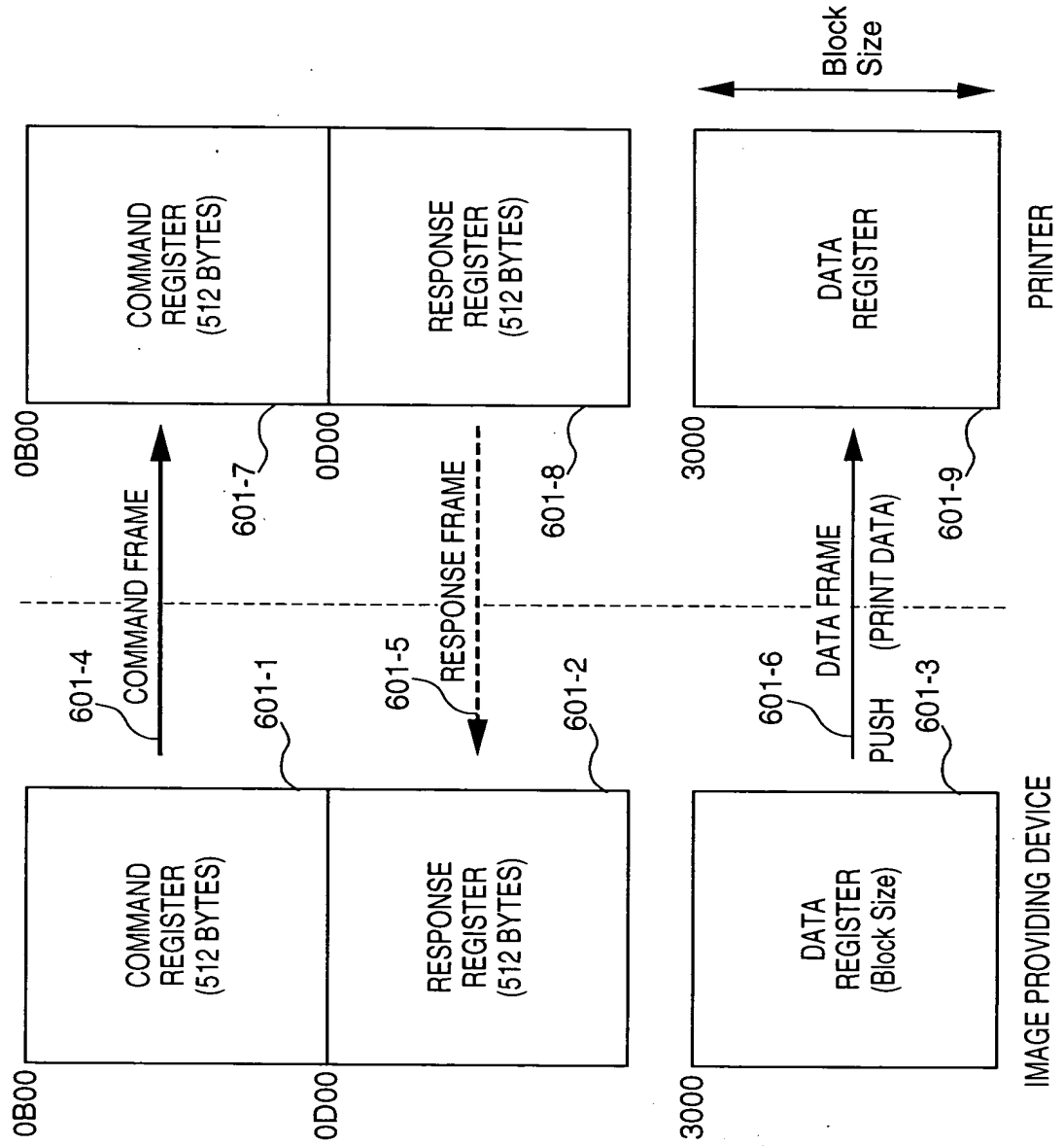
**FIG. 42**

|                  |   |
|------------------|---|
| EXIF(TIFF, JPEG) | EXIF NON-COMPRESSED AND COMPRESSED DATA |
| TIFF/EP          | TIFF EXTENDED VERSION                   |
| RGB              | RGB RAW IMAGE                           |
| YUV              | YUV RAW IMAGE                           |
| YCrCb            | YCrCb RAW IMAGE                         |
| CMYK             | CMYK RAW IMAGE                          |
| Vendor Specific  | VENDOR DEFINITION                       |



**FIG. 43****FIG. 44**

**FIG. 45**



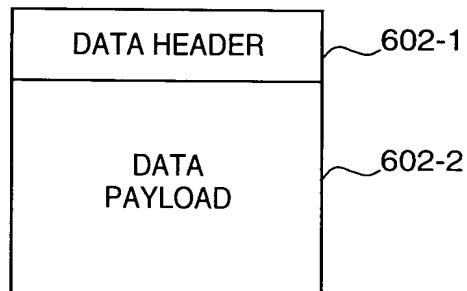
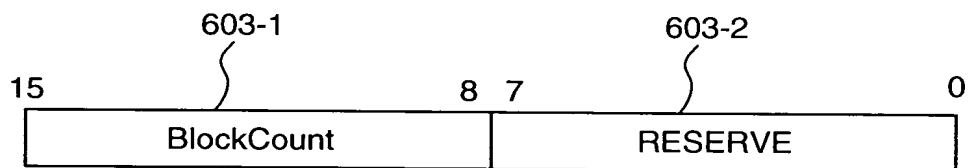
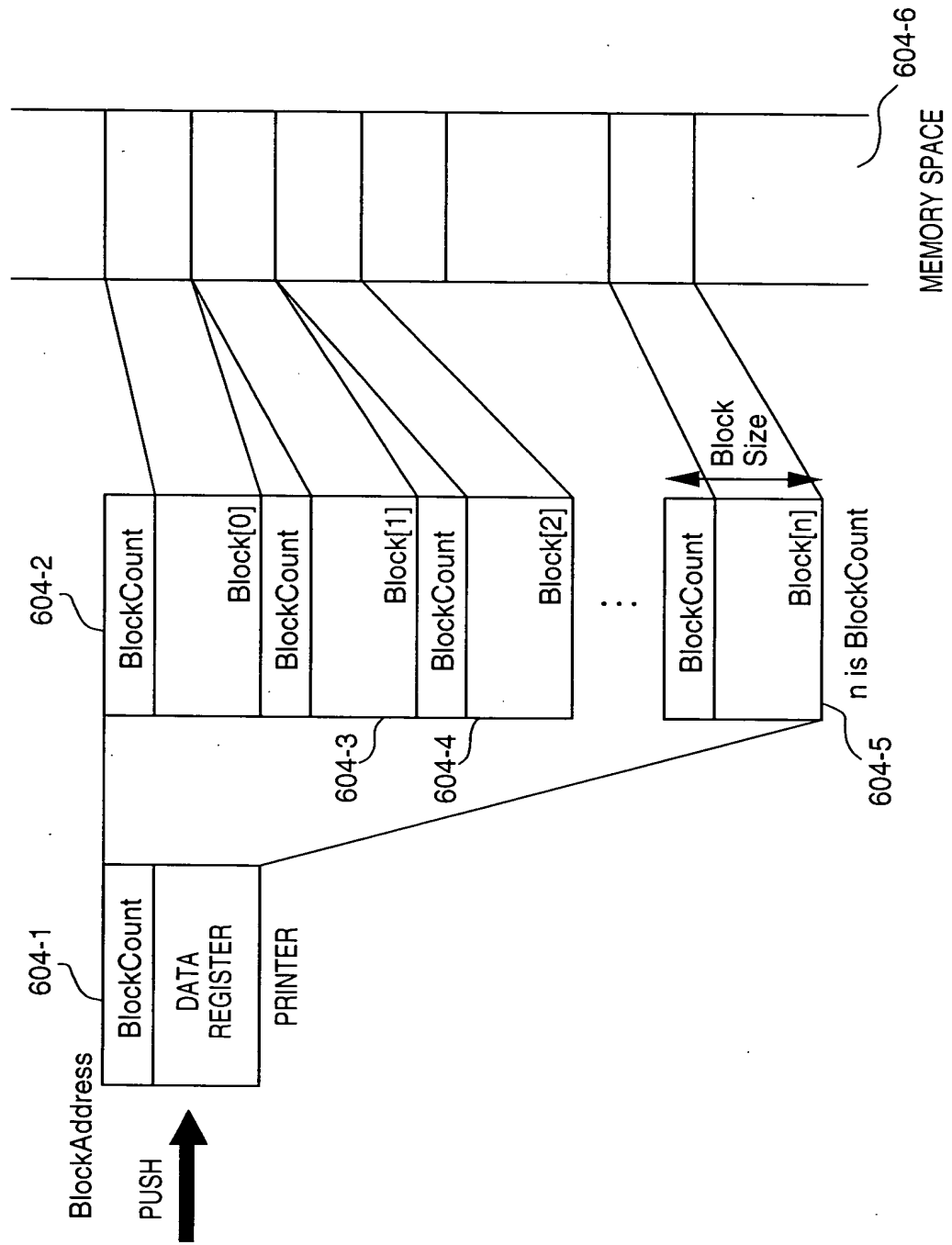
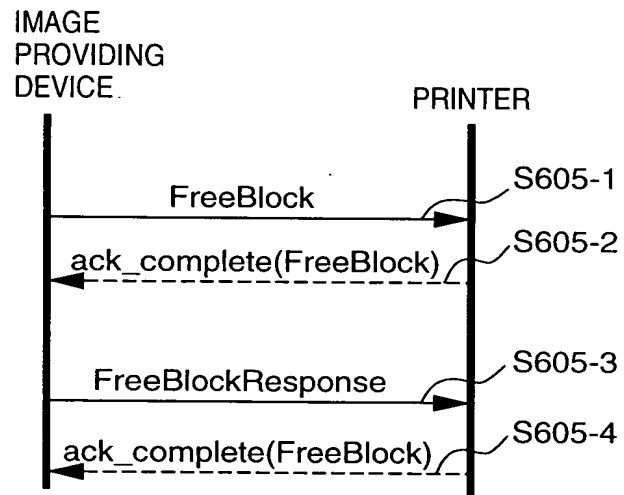
**FIG. 46****FIG. 47**

FIG. 48



**FIG. 49**

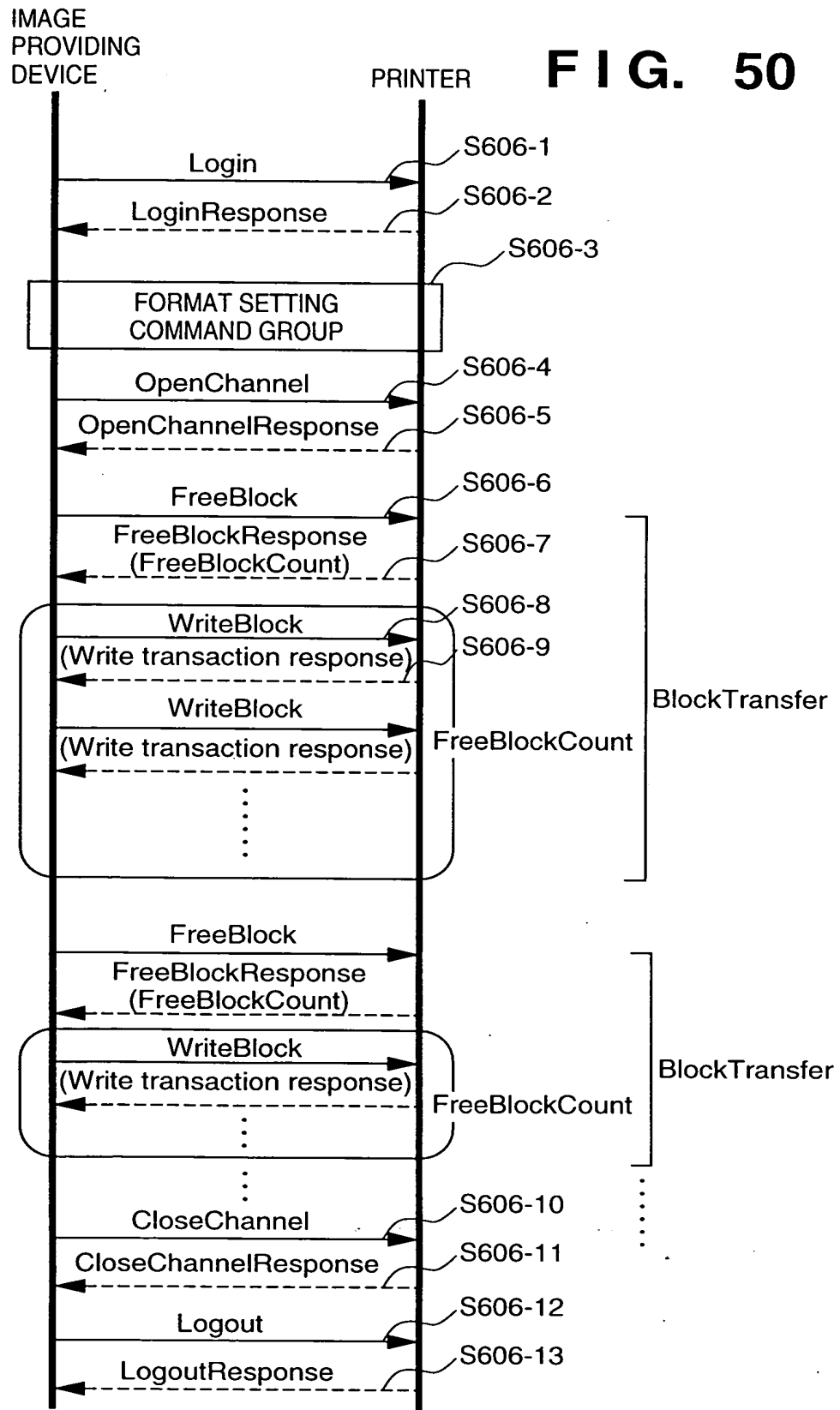
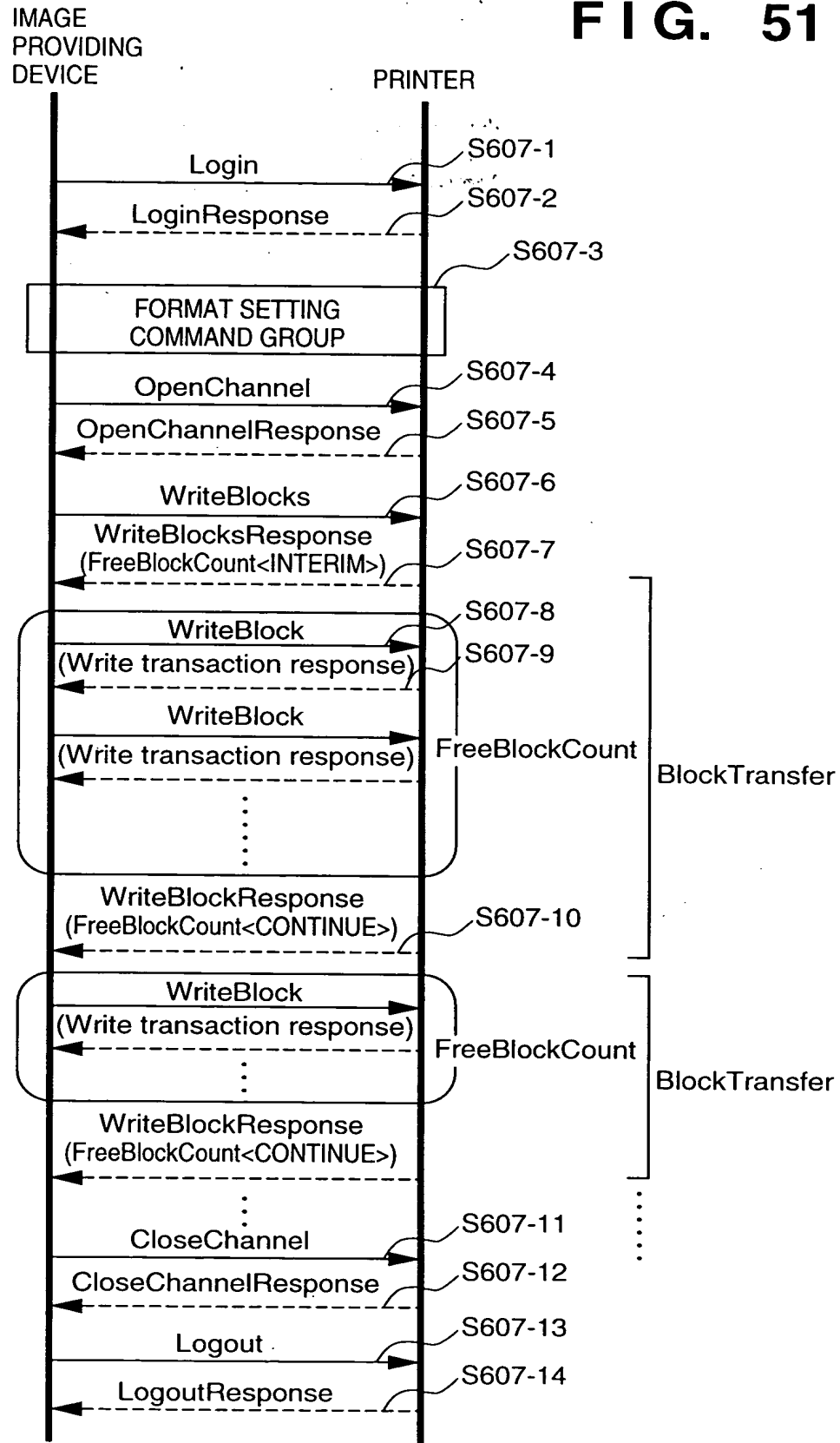
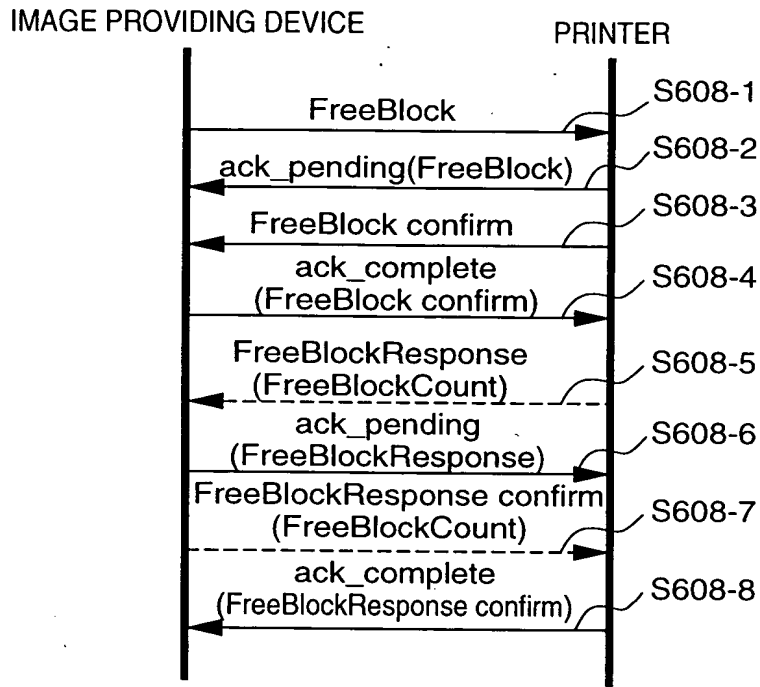
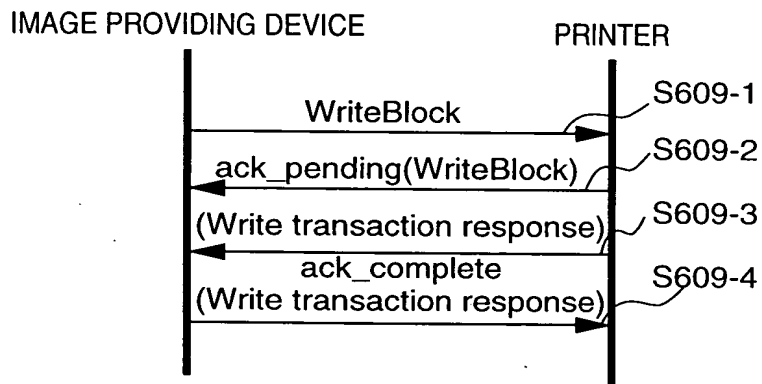
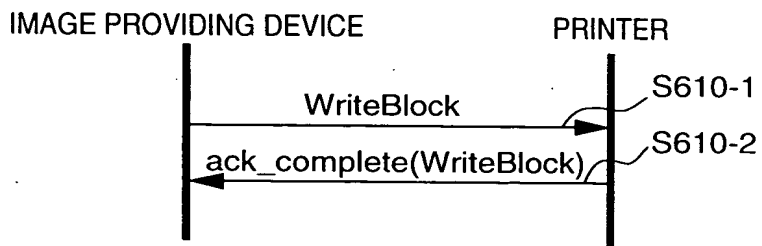


FIG. 51



**FIG. 52****FIG. 53****FIG. 54**



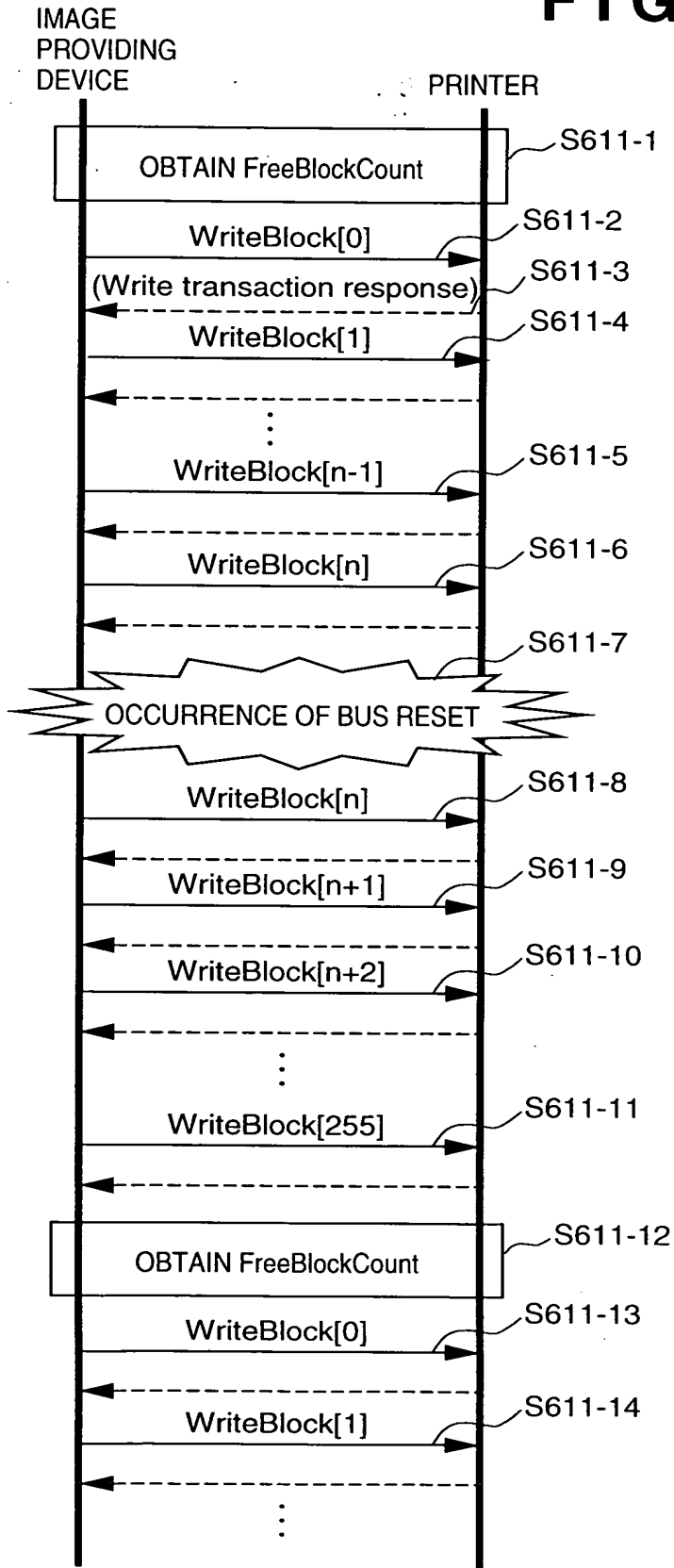
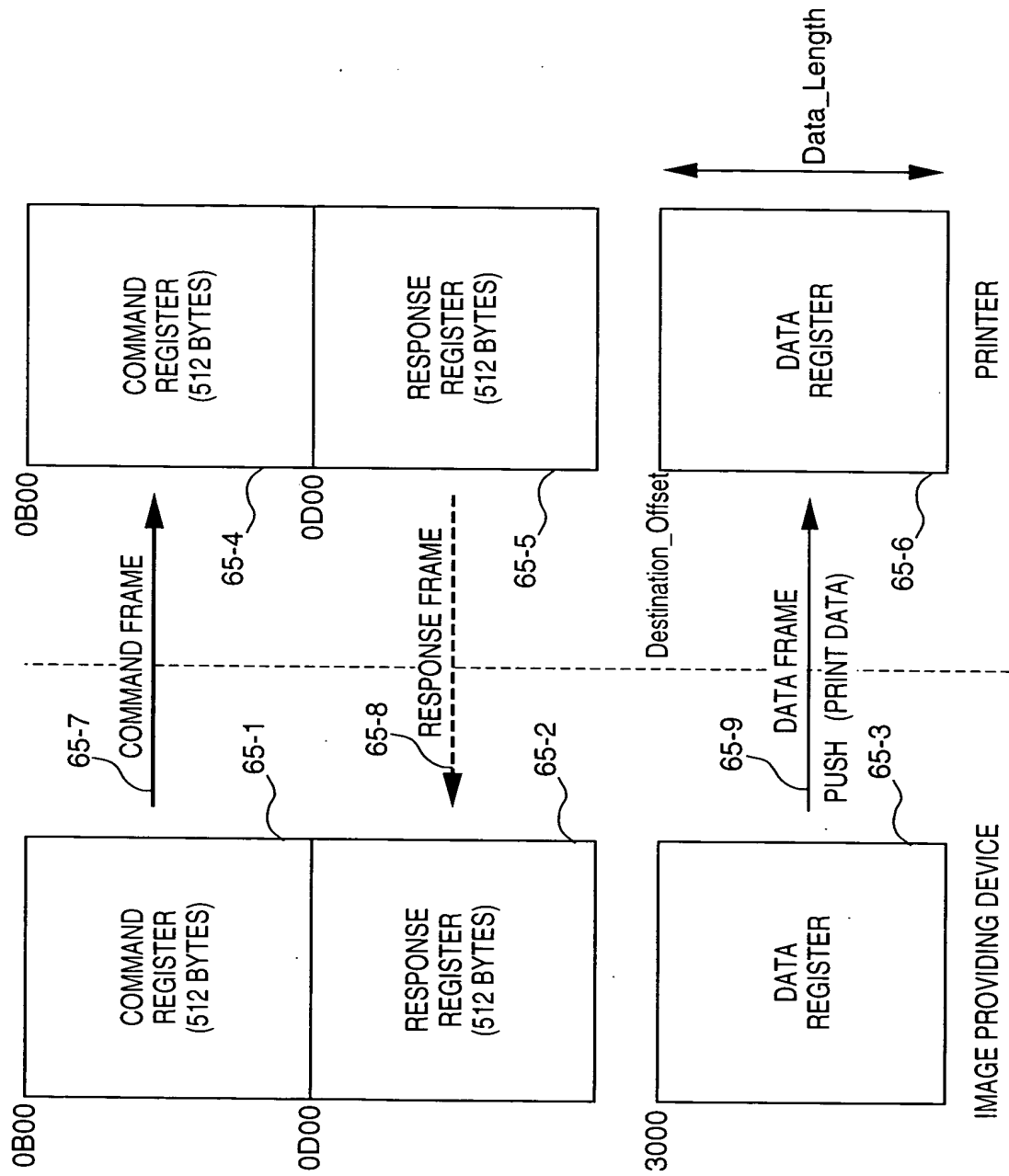
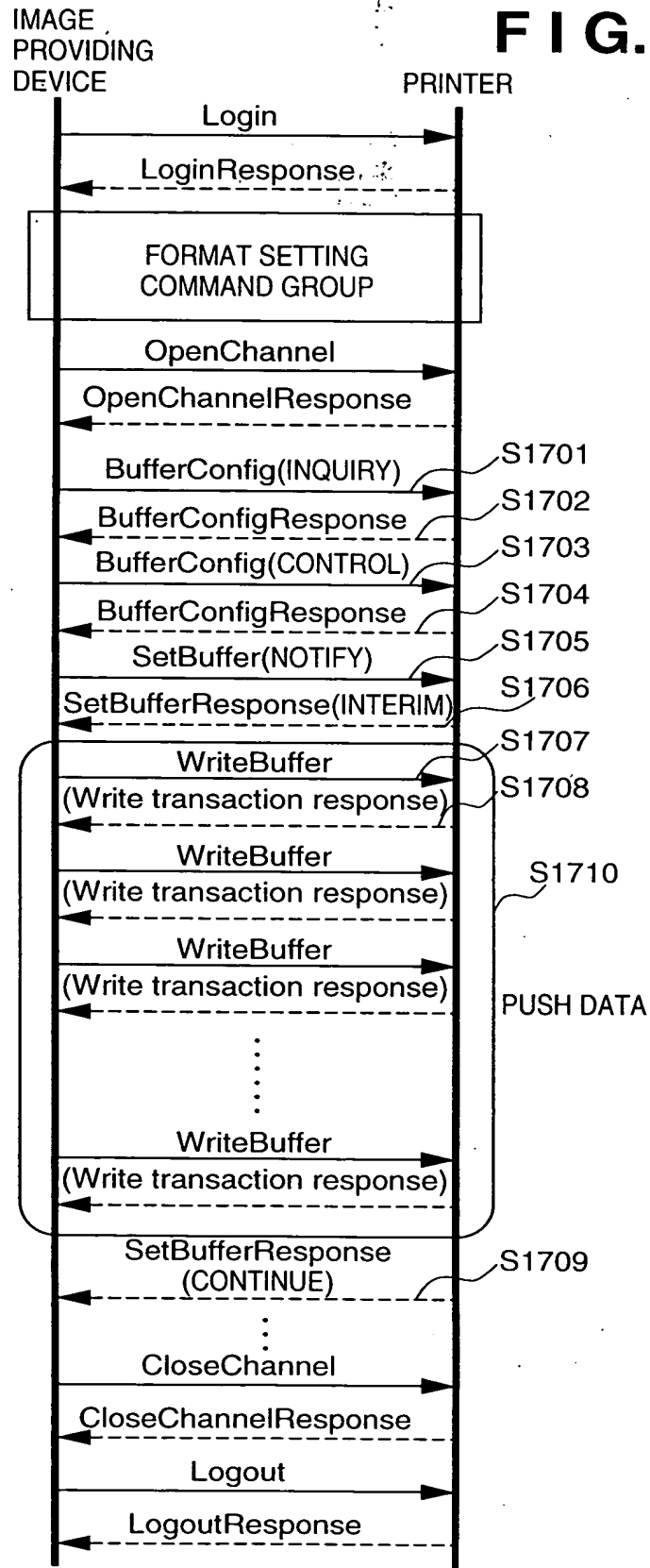
**FIG. 55**

FIG. 56



**FIG. 57**

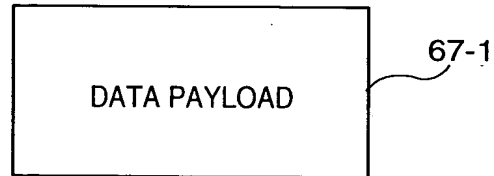
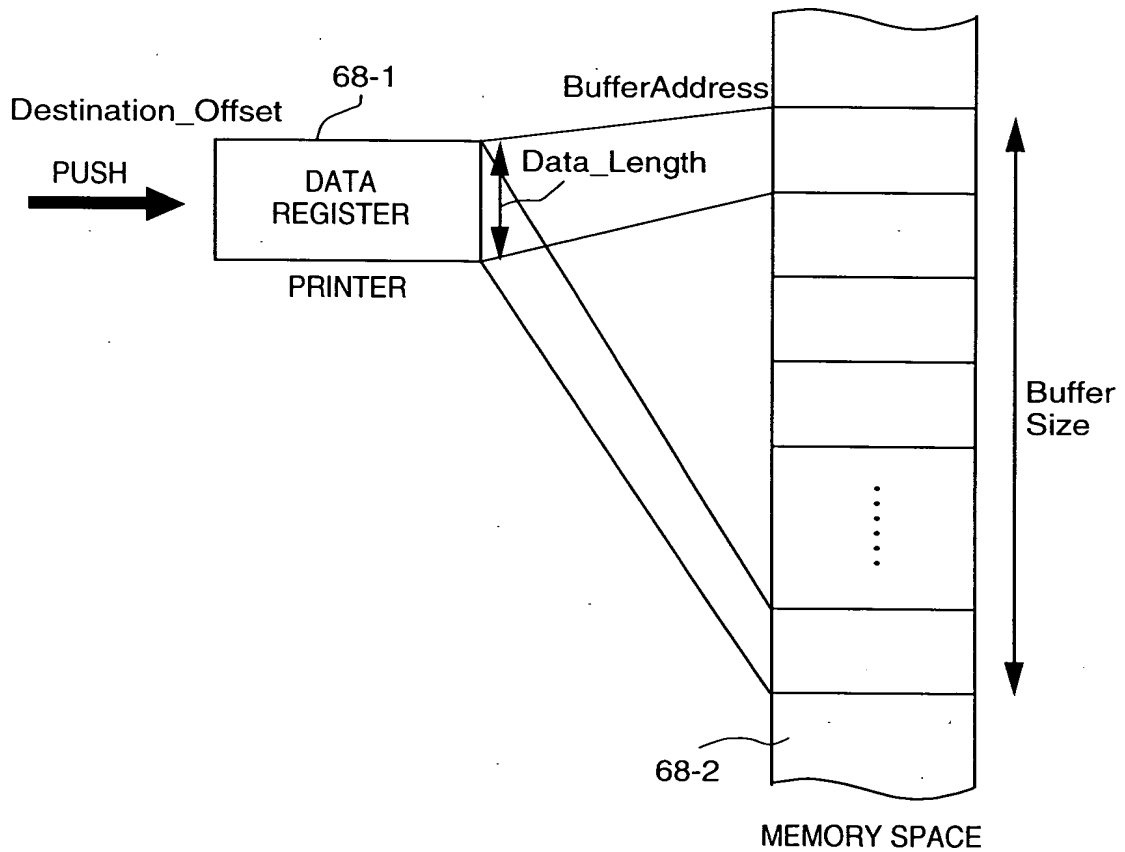
**FIG. 58****FIG. 59**

FIG. 60

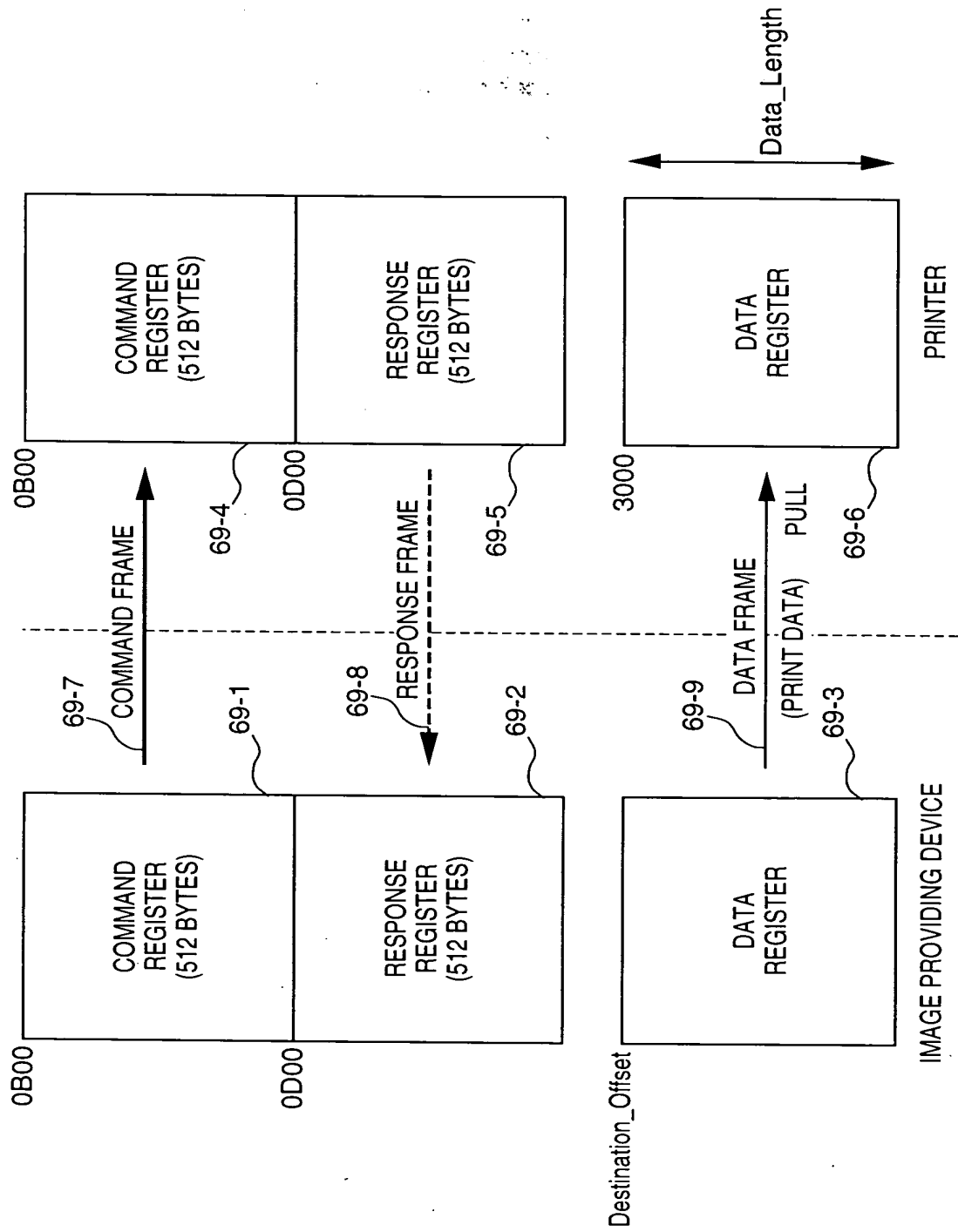
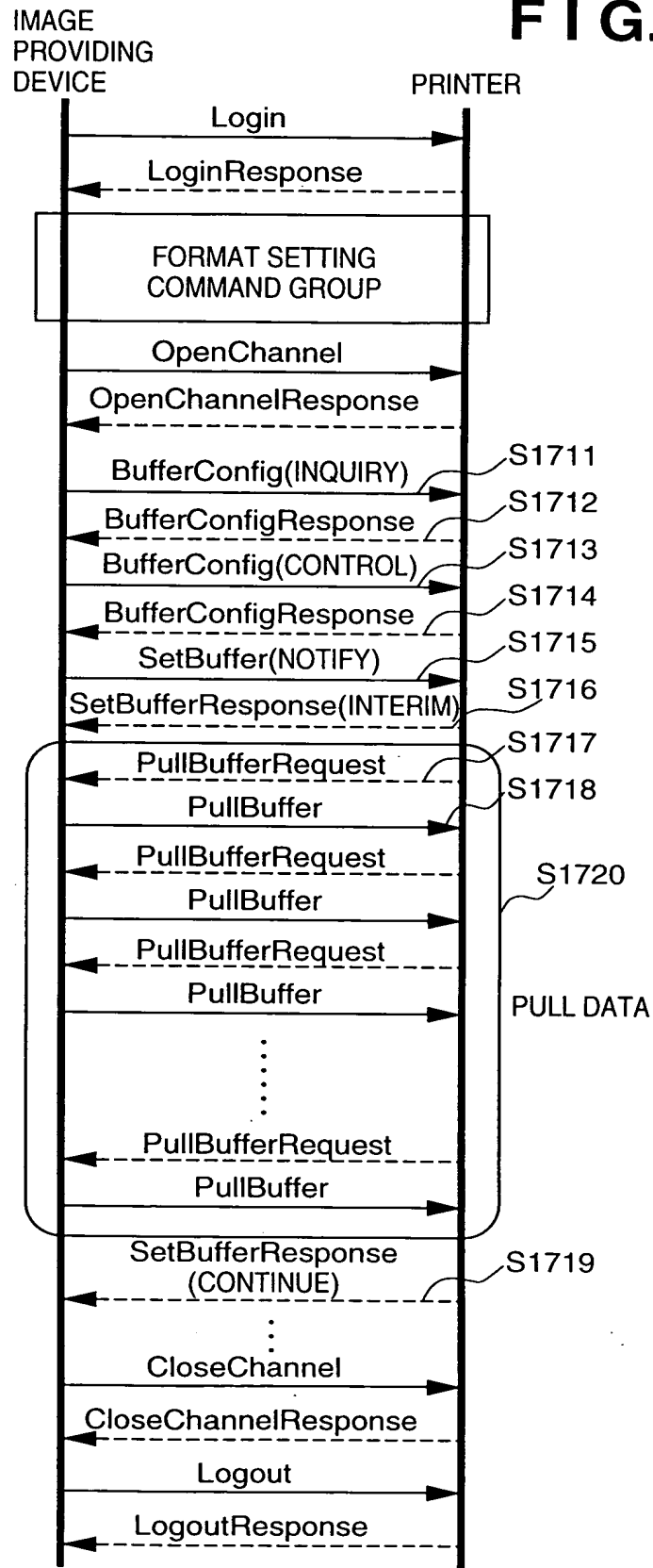


FIG. 61



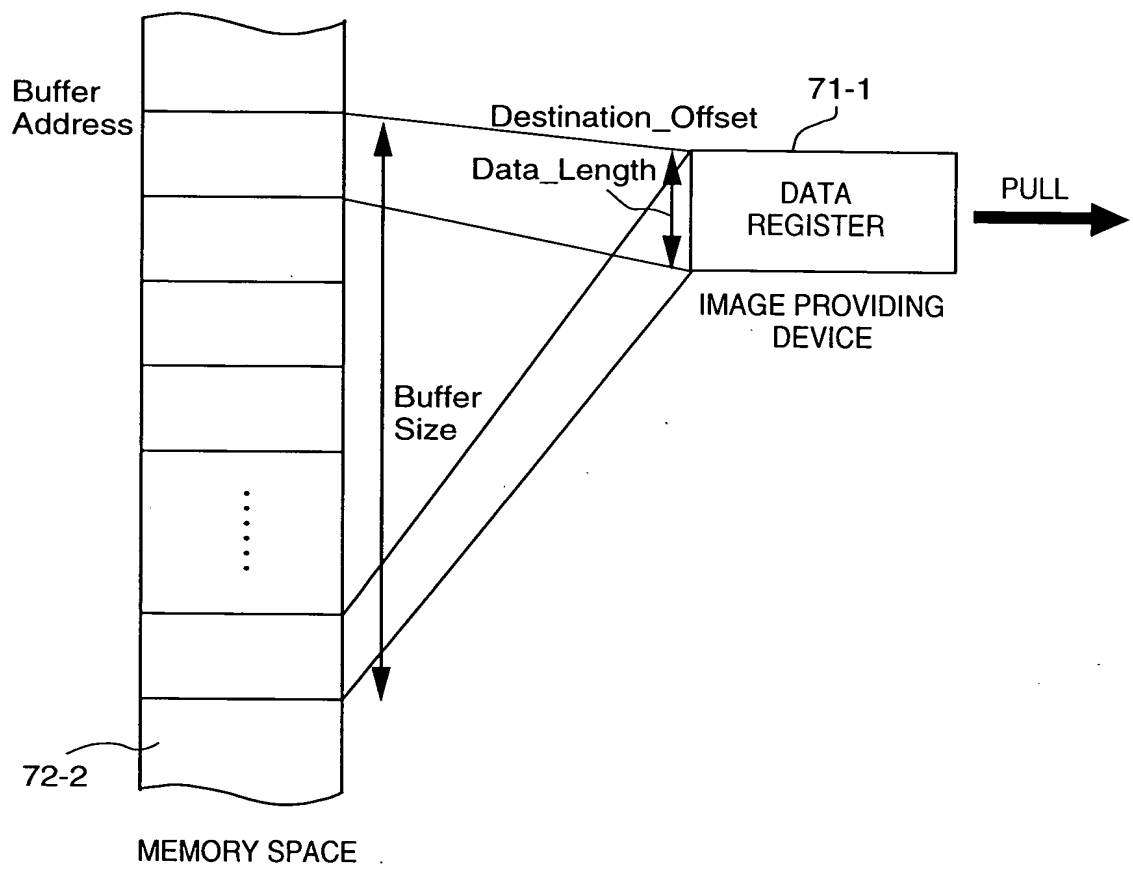
**FIG. 62**

FIG. 63

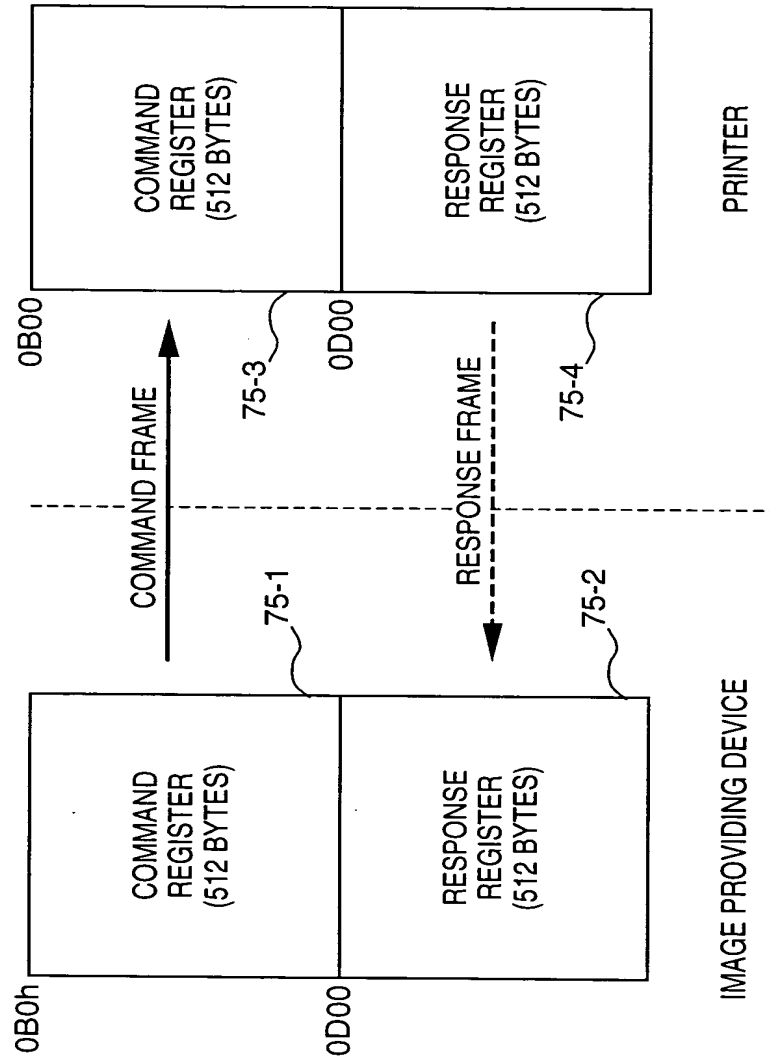




FIG. 64

